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June/July 1988

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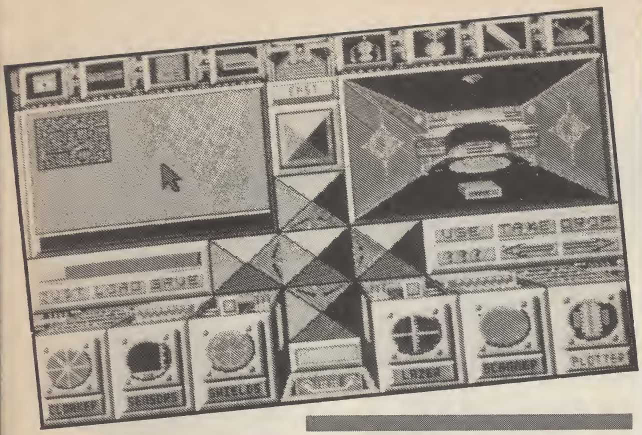
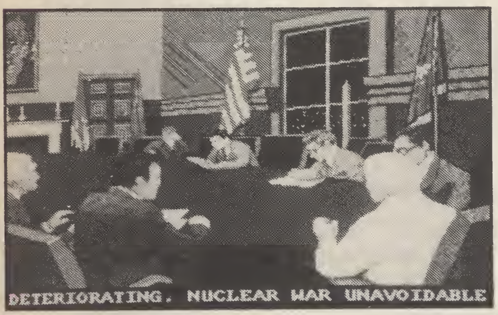
- *Luminance – light sources from a user-defined direction and intensity.*

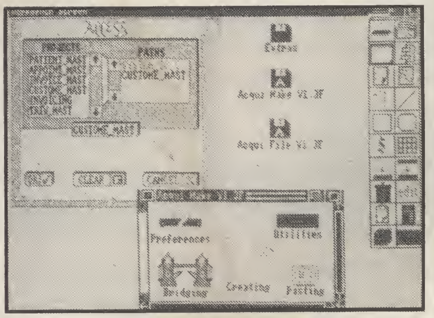
Watch out for Photon Paint in early June!



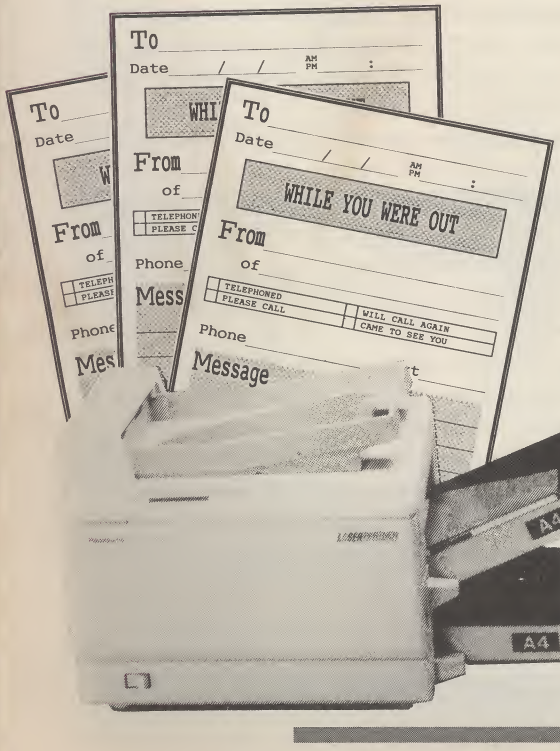
Hampton Court — Slaygon


DETERIORATING. NUCLEAR WAR UNAVOIDABLE

SDI from Cinemaware



Acquisition Inquisition



Laser Printing on the Cheap

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Editor: Stuart Cooke
Deputy Editor: Sue Joyce
Technical Assistant: Fred Reid
Ad Manager: Paul Kavanagh
Ad Copy Control: Andrew Selwood
Origination: Project 3
Designers: David Caole, Kim Goodhew

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ARGUS
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GROUP

Welcome

Before writing this introduction to the magazine I spent days trying to think of something new, original, and exciting to kick off with. In the end I decided that the old ways were the best and that there was nothing better than a good old **Welcome to this, the launch issue of Your Amiga**.

OK, so the statement is nothing stunning but it does get the point over.

To call this, the *launch* issue of *Your Amiga* is perhaps a little bit of a cheat. Many of you will no doubt be aware that *Your Amiga* has lived off its sister magazine *Your Commodore* for some time and has made a regular bi-monthly appearance within it. Watching the growing success of both *Your Amiga* and the Amiga range of computers has made us feel that it is now the right time to give *Your Amiga* its own identity.

Here in the editorial office we still haven't got over the excitement of being able to devote a whole magazine to what is undoubtedly our favourite computer. Programs arrive at the office every day that increase this excitement because of new advances in what the programmers are doing with the machine. I can't wait to see what software houses are doing with the Amiga in say six months time, don't worry we'll keep you in touch.

You will find this first issue of *Your Amiga* packed full of information on both the entertainment and serious aspects of your computer. Connoisseurs of fine games will find the latest programs reviewed. Should you want to find out more about your computer then our programming series and technical articles will start you on your way.

I feel that I should take this opportunity to state that *Your Amiga* is being produced for you, the reader. Please let us know if there are specific areas of your computer that you would like us to cover. Even better, why not complete and return to us the small readers survey to be found in the magazine. Not only will the results of this help us to tailor the magazine to your requirements, but, will also give you a chance of winning an Amiga 500!

Stuart Cooke

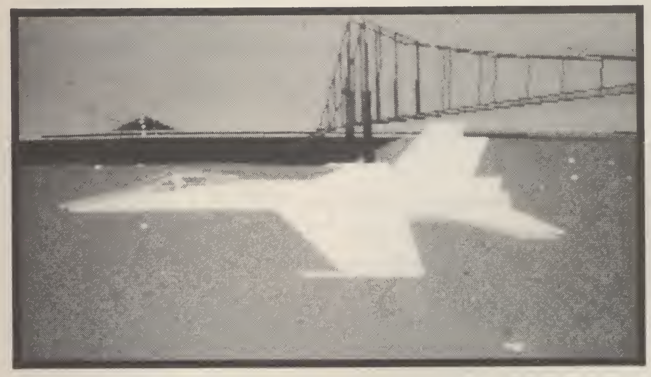
AMIGA UPDATE

INTERCEPTOR READY FOR TAKE OFF

Interceptor, the new combat flight simulator from Electronic Arts is on course for take-off at the end of May.

Interceptor will cost £24.95 and will give computer pilots the choice of two real fighter planes — the F-16 Falcon and F-18 Hornet, to fly on six combat missions in the skies around San Fransisco.

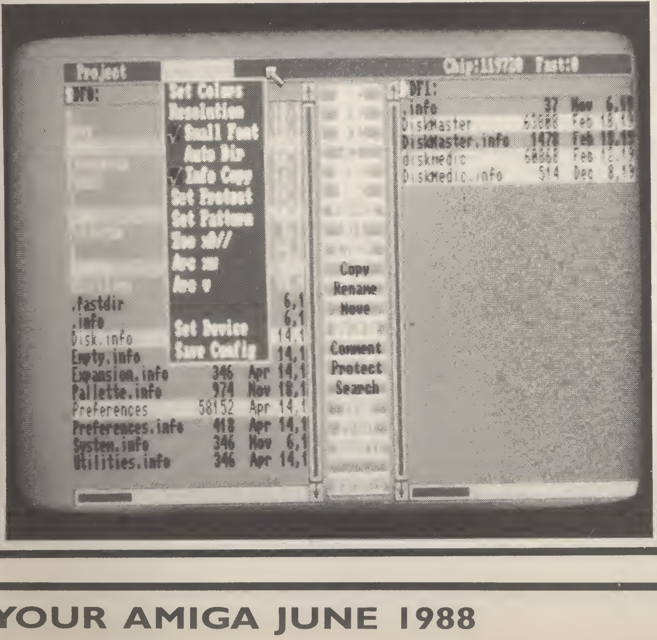
Once you have mastered the controls of these fighters and landed on three Bay airports and aircraft carrier USS Enterprise you're ready for the six combat missions. These include the protection of the President who's flying in Airforce One, preventing World War II by shooting down incoming cruise missiles, saving a pilot whose crashed into the sea, and preventing the escape of two stolen F-16's.

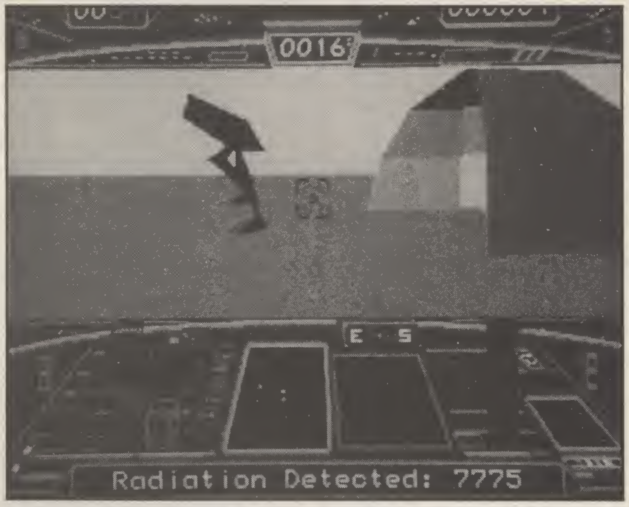


DISKMASTER

DiskMaster is an advanced file management utility for all Amiga users. Two large display windows let you view and manipulate over 70 files at once! Through a touch of a mouse button you can move, copy and rename filed, create directories, print text files and adjust page length, margins and page numbers.

DiskMaster is ideal for use with large memory or hard disk systems and replaces the need to learn AmigaDOS commands, with a touch of a button.





STARGLIDER II

Starglider II is the long awaited sequel to Rainbird's Starglider and continues the fight against the evil Egron empire. In Starglider the game's heros, Jayson and Katra fought off the tanks, planes and missile launchers that had invaded their home planet Novenia. Now, in *Starglider II* they take the battle to the Egrons by embarking on a hazardous journey to the planet Mira.

Their mission is packed with danger as the route takes them through a series of space jumps to planets populated with aliens and creatures including Space Whales, Pac-worms and Manta rays. However, they must not fail as the Egrons are constructing a mighty beam projector to destroy Novenia.

Amiga owners can sign to save the world and defeat the Egrons for only £24.95.

PRECISION PAVE THE WAY FOR PROGRESSIVE PERIPHERALS

Precision Software is set to expand its impressive range of Amiga hardware and software by importing a new range from Denver based Progressive Peripherals & Software Inc. including Access-64 which allows the Amiga access to C64 disk drives and printers.

Access-64 (£59.95) avoids the usual waste of peripherals when you update to a new machine, as the combination of hardware and software can use existing C64 printers and disk drives without using new commands (e.g. disk drives become DF8: and DF9;).

Utility software will also convert C64 sequential files so important data can be retrieved.

The ProPower 500 replacement power supply will solve those power problems for expanding Amiga 500 systems. Now you can add extra disk drives and RAM extensions without overloading the supplied powerpack.

The ProPower 500 is specially designed to drive the EXP-1000 and EXP-8000+ RAM extension boards that will add one and two megabytes to your Amiga accordingly (the EXP-8000+ is expandable to a massive eight megabytes!). Both boards fit nearly inside the Amiga and you can expand the EXP-8000+ further by adding an optional 68010 processor and 68881 maths co-processor.

COMMODORE IN THE BLACK

Commodore, internationally speaking, came out of the red and into bed with some healthy financial results for a change over the past 6 months.

Their top brass candidly admit that the company's future fortunes are based on the Amiga range. The Amiga 2500, an official 68020 Amiga, will be available in September. Sounds like a trip to the Personal Computer Show could be worthwhile this year, especially since the Your Amiga team will be there too. So come and say hello.

BONECRUSHER

Superior Software have released the Amiga version of *Bonecrusher* (a former Game of the Month in *Your Amiga's* sister publication, *Your Commodore*) in which you will need your wits and skill to solve a series of mind-mangling mazes.

The hero of *Bonecrusher* (£14.95), Bono, must collect enough skeletons to melt in the pot to produce soap to satisfy the customers in the small dragon's bath house. To complete the game you will have to master control over the glooks, avoid the deadly touch of monsters and spiders and retain a grip on reality while that game is trying its best to boggle your brain.

PIXMATE

The Professional Computer Image Processing and Enhancement package PIXmate includes over 3000 special effects that it can perform on a single image.

Developed from technology pioneered by NASA, PIXnmate uses the Amiga's Blitter chip to accelerate the graphics processing speed by a factor of ten, and supports and converts between all graphic modes (including HAM 4096), performs logical, pixel and matrix image operations, includes pseudo colouring and edge detection.

PIXmate is operated through a series of pull-down menus and can be used for a variety of applications from the preparation of artwork for offset printing or lithography, to the conversion of photographic negatives to positives without darkroom processing.

IntroCAD and UltraCad are two CAD systems for those looking for introductory and professional design tools.

IntroCAD features easy to learn controls and options such as isometric and projection gridding, a user defined parts library, multi-level zoom and support for a variety of printers and plotters that make it ideal for creating anything from floor plans, to formulas and structural diagrams, to service manuals.

UltraCAD offers a professional design tool for all those who understand features such as Auto-dimensioning, object orientation, Snap-To and Razor mode.

For more details and prices contact Precision Software on 01-330 7166 or at 6 Park Terrace, Worcester Park, Surrey KT4 7JZ.

AMIGA SHOW STATESIDE

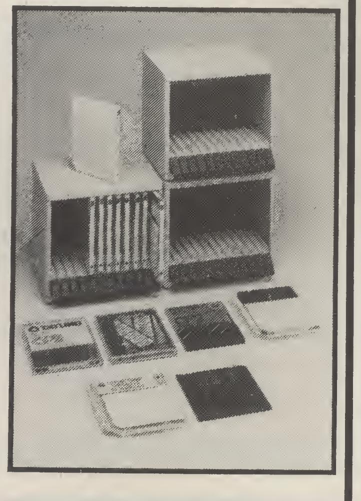
The AmiEXPO. the established Amiga showcase in the USA, is "happening" again at its Midwest centre from July 22nd to July 24th, at the Hyatt Regency, Chicago, Illinois.

So if you are taking advantage of the strong pound and holidaying in America this Summer why not head along? The seminars include The Architect's Amiga, The Amiga and MIDI, Animation Amiga, Cell, Metamorphic and 3-D amongst others.

New products on show in Chicago include the AX disk magazine, Abacus' AssemPro assembler, Quarterback hard disk backup from Central Coast Software, the "Over 30" 68030 board from Computer System Associates — signs of things to come? — Mandala laser disk controller from Very Vivid Ltd, Library from WordPerfect Corporation, Pageflipper Plus desktop video from Mindware, Dynamic Studio MIDI sequencer from New Wave, SNIP digital signal processor from Digital Dynamics, and Video Toaster from NewTek.

Meanwhile the Ami organisation has set up AmiNET, a user group with bulletin board and telephone support, a job bank for professional users, cheap AmiEXPO tickets and specially commissioned software.

STACK-A-DISC



Earley Marketing thinks it has the answer to your disk storage problems with its stacking modular units.

Each unit costs £12.95 and can store 12 3″ or 3½″ disks in spring forward action slots, and comes complete with 12 library cases and record cards for your uncased disks.

Earley Marketing supply the units to W. H. Smith and John Lewis, or you can contact them at Calleva Park, Aldermaston, Berks, RG7 4QW or on 07356 77171.

HOORAY FOR HOLLYWOOD

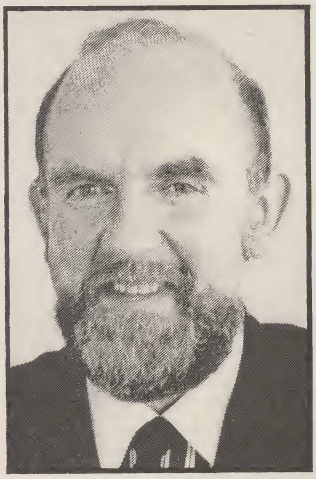
Play the new Mirrorsoft Cinemaware game The Three Stooges and you can take part in a competition whose prize is to fly out with a friend to California, be taken to Hollywood, be shown the studios and the home of Cinemaware. There will be hosts of cinema tickets as runners-up prizes.

SPORT AID GAME

Code Masters are writing the arcade adventure, including an Amiga version, which will be an important part of Sport Aid's charity promotion this Summer. The game will be called The Race Against Time and is an action packed world marathon designed to do away with the international barriers of language.

You may have seen The Race Against Time officially launched on the television show Get Fresh earlier this month.

YEAR OF THE RAT



Mandarins Peter Holme, Chris Payne and Mike Cowley, want to influence the software industry to as great an extent as their ancient Chinese namesakes! The new software label has got off to a good start with the signing of Level 9 — known for their Amiga adventure compilations on Firebird — and Red Rat.

Level 9's current release is Time & Magik with a project codenamed "Lancelot" under development.

Red Rat's first Amiga title marketed through Mandarin will be Rally Run, a game based on the Lombard RAC event. It will be available in time for the Personal Computer Show in September, priced around £20.

GAMES UPDATE

Amiga games are increasing in number and quality every month, with the top software houses releasing more and more new titles and converting old favourites.

Hewson have a trio of top titles due for Amiga release in the Autumn.

Nebulus is a superb if curious game, in which Pogo must fight, jump and blast his way to the top of a succession of rotating towers. Traps including disappearing stairs simply add to your problems as you battle against an alien onslaught.

Zynaps is a Nemesis style shoot'em-up set in an alien infested planetary system, in which you can build up the firepower of your craft by blasting the enemy.

Finally, Exolon is a heavily armed humanoid who must blast battle, bound and blunder his way through the screens of blood-curdling action. Although this trio isn't due for release for several months, you should start tuning up your reactions for the challenge that lies ahead.

MIDI "SOUNDSCAPE"

This year's Personal Computer Show will feature a MIDI section with leading suppliers software and hardware interfacing with musical instruments. There will also be keynote speakers on the subject.

EXOCET POWER

A new company called Exocet, headed by former TBD buyer Terry Jefferies, are entering the 16-bit market with an Amiga release on the way.

POWERPLAY

Arcana Software's Powerplay is now out in its finished format after "production problems". Max Taylor of Arcana says that their next release will be Mars Cops with Crater Wars following in September/October.

BUBBLE BOBBLE

Firebird's Bubble Bobble (£19.95) promises to be one of the best of the current crop of coin-op conversions.

In the Amiga version of the Taito arcade game you must guide the cute brontosaures Bub and Bob through 1000 and more screens of crazy bullies, secret weapons and bursting bubbles, as you avoid the deadly attention of the Baron Von Blubba and the infamous Skull Monsta.

MERCENARY

Novagen Software's classic Mercenary has been published in more than 50 foreign language and machine formats. Now as part of the Compedium edition it makes its Amiga debut.

Featuring enhanced sound routines and fast graphics the Compedium Edition (£24.95) contains this superb science fiction, trading, shoot'em-up along with the sequal, Second City, and the maps and plans pack the Targ Survival Guide.

THE THREE STOOGES SAVE THE DAY!

The Three Stooges are the lastest Saturday morning cinema heros to star in a Cinemaware game, and will be followed shortly by the adventures of Commander Tom Cody in Rocket Ranger.

The hapless heros Moe, Larry and Curly have just 30 days to raise enough money to pay off the mortgage on the orphanage before the evil banker, Mr Fleecem closes it and throws the orphans out onto the streets of Stoogeville. The game is based on a board game format with each square either becoming a chance to make money of a hazard to be avoided.

As the game progresses Moe will take part in a cracker eating contest with an oyster; Curly goes six rounds in a prize fight and all three become surgeons in the hospital and start a pie fight, when they sign up as waiters at a High Society Banquet.

Rocket Ranger is set in the year 1940, and Commander Cody receives an urgent message from the 21st Century! Scientists from an oppressed world built from a Nazi victory have sent Cody a rocket suit and ray gun to help him change the course of history, and save mankind from eons of tyranny.

Tom, alias Rocket Ranger, must frustrate the Nazi plans to build a moonbase and destroy the lunarium mines. In the game he will rescue a scientist kidnapped and held on a Zeppelin; battle with burly guards for the parts to build a rocket; dogfight with German fighters; slug it out with gun emplacements guarding Nazi jungle bases before saving the world in a final battle on the moonbase.

The Three Stooges and Rocket Ranger will be available from Mirrorsoft and will cost £29.99.

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A NEW CHARACTER
COMMANDO CODY
RADAR MEN
From the MOON
GEORGE WALLACE ALINE TOWNE
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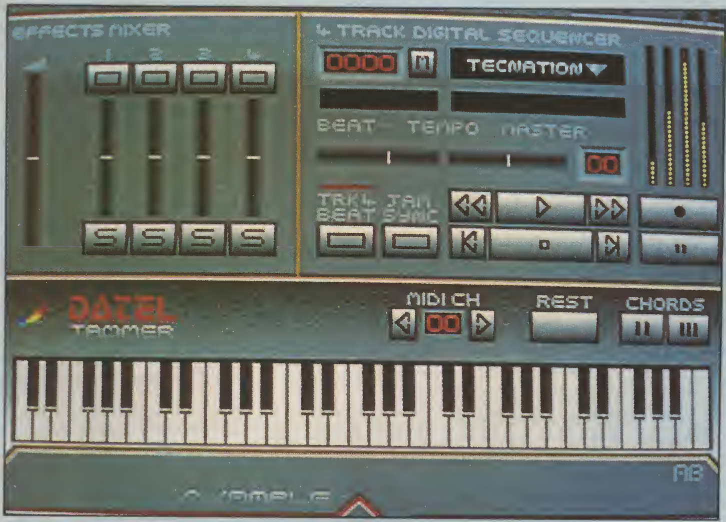

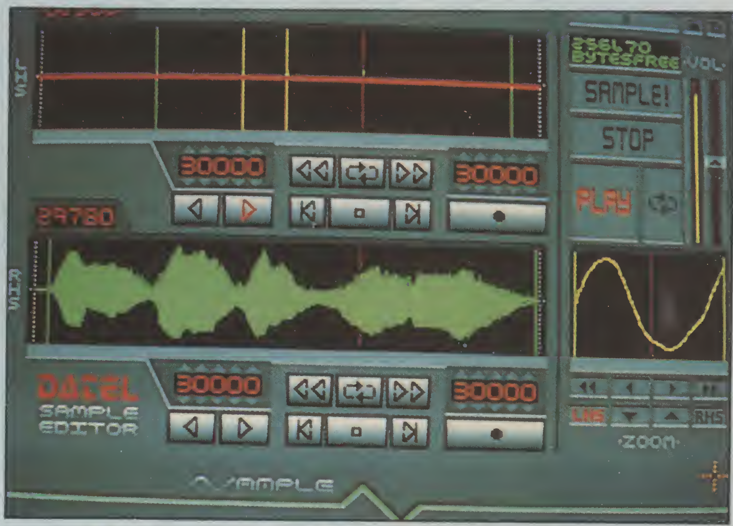

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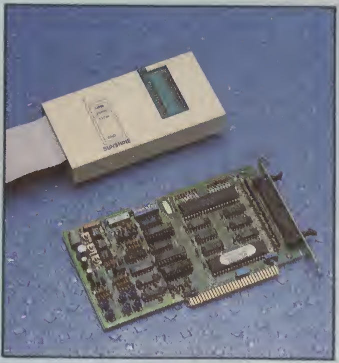

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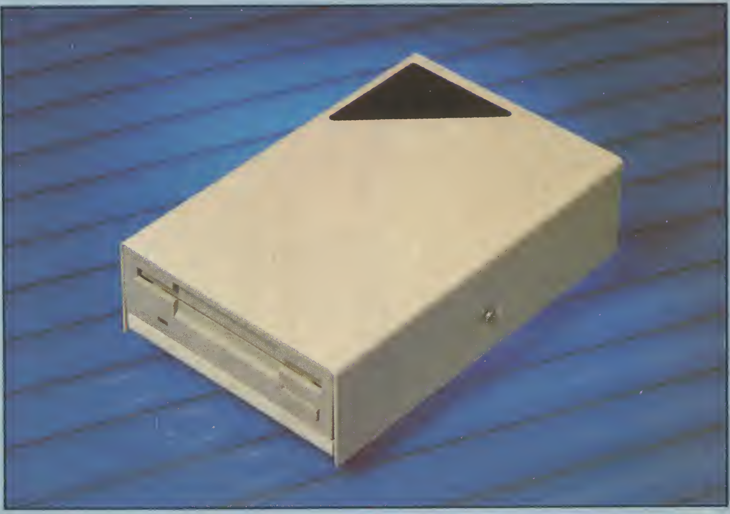

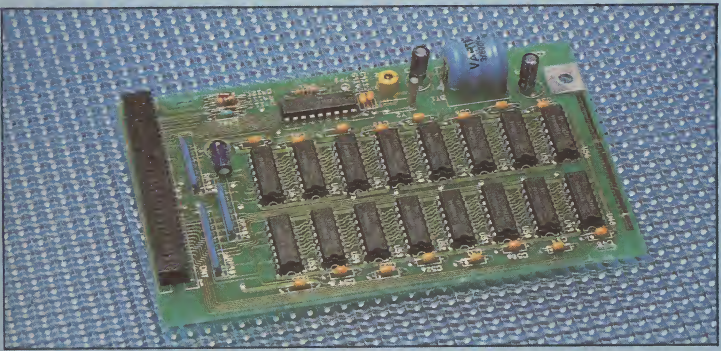

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Computer Illusionists

One major problem with imported American software is the price. Activision is now marketing Microillusions software, at a more reasonable UK price. Gordon Hamlett tries some of this previously expensive software out.

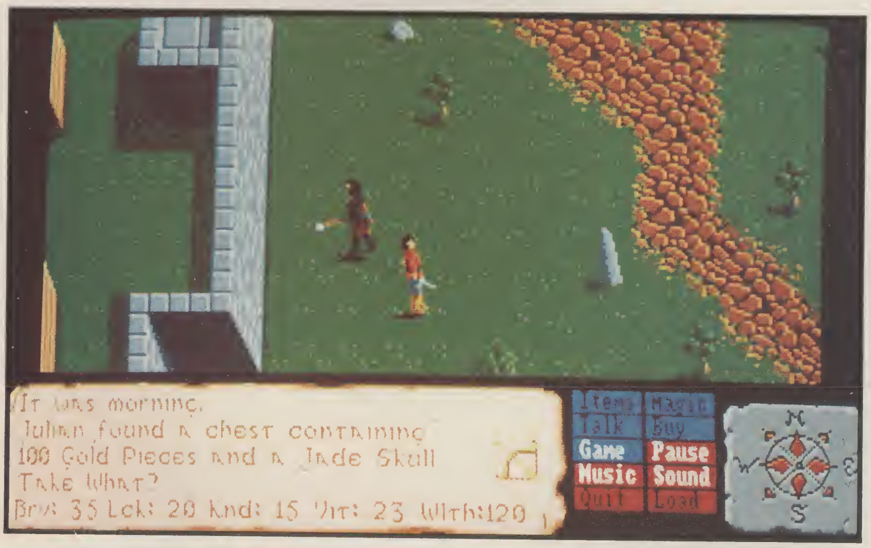
■ **Activision has acquired the rights to distribute** games from Microillusions that were previously available by import only. This will mean a welcome reduction in price for anyone interested in buying them. The first four games are about as diverse as it is possible to imagine so there should be something to appeal to everybody.

Sweet Stories

Although billed as 'The Adventure', *Faery Tale* (£29.99) is more of a role playing game. Set in the land of Holm, an evil necromancer is holding the country to ransom, demanding large ransoms from all and sundry. Even the king is helpless as his daughter has been kidnapped and he is afraid of what might happen to her.

There is however a prophecy that states how this evil might be destroyed. Seven quests must be completed before you can even think about finding the necromancer. Then he must be relieved of his talisman.

The task of saving the land falls on the shoulders of three brothers. They set out, one at a time, the next one only continuing the quest should the first one die. Thanks to magic, each brother has more than one life but every time he is resurrected, his luck decreases. Once it reaches zero, his life is irrevocably over.



It was morning.
Julian found a chest containing
100 Gold Pieces and a Jade Skull
Take What?
Brv: 35 Lck: 20 Knd: 15 Vit: 23 Wlth:120

A Pretty Land?

The land is huge (around 144 screens x 100), all depicted in a raised 3-D perspective. There are towns and castles a-plenty to visit, if you should survive for long enough in the wilderness. Armed initially with only a dagger, you soon discover that the odds are stacked heavily against you. Skeletons, goblins, wraiths and bandits roam the countryside. Defeating one of them is easy enough if you have a sword or a mace but they always attack in groups of four and you need to manoeuvre them so as to be able to fight them individually.

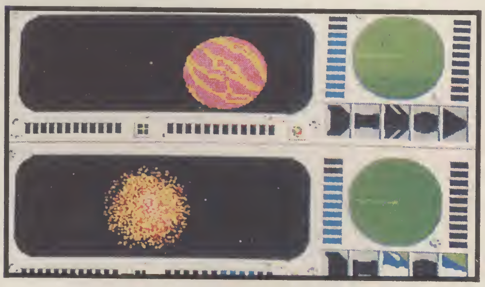
There are various magical items to be discovered on the way. These might be hidden in buildings, picked up from defeated foes or even found lying on the ground. Items can be used only once and you must find out for yourself what effects they have.

Anyone who does not attack you is likely to be friendly and you can try talking to them. The chances are that they will give you some useful information. Naturally, you will need to sleep and eat. Food can be bought at taverns but you can't carry any with you which seems slightly unfair.

Although not perfect by any means, Faery Tale offers a lot of game for the money and if you enjoy this type of game, then I don't think that you will be disappointed.

To Boldly Go

Deepest space is the setting for the second game, *Galactic Invasion* (£19.99).



The game is basically a futuristic dog fight and as such can be played either against the computer, a human opponent or even someone at the other end of a modem!

The playing area consists of two solar systems separated by a band of meteors. The ultimate aim of the game is to destroy your opponent's solar system. To do this, you first have to find and collect the five pieces of a missile that could be hidden anywhere — in satellites, the meteor belt etc. all parts are colour coded and three different missiles can be made. No mix and match allowed here.

Keeping Watch

Should you wander anywhere near your enemy, you are of course at perfect liberty to try and shoot him down. Each player has unlimited lives — getting shot just means that you have to start looking for the missile parts all over again. Radar screens help you locate any impending trouble.

Other problems that you will encounter are gravity and refuelling. Each solar system has a sun (two in the case of your computer opponent) and flying too near to it quickly transforms you into a sort of Intergalactic Kentucky Fried Chicken. There is a gravity monitor on your instrument panel. Extra fuel can be garnered by blasting poor defenceless bits of space debris although multiple hits on each meteor are required.

Control of your spaceship takes some getting used as you try to battle against the effects of the inbuilt inertia and gravity let alone worrying about the possible damage from being shot at. As such, the game probably works best if you are playing against a human opponent. I found that the computer tended to win too easily although a lot of that is likely to be my own cackhandedness.

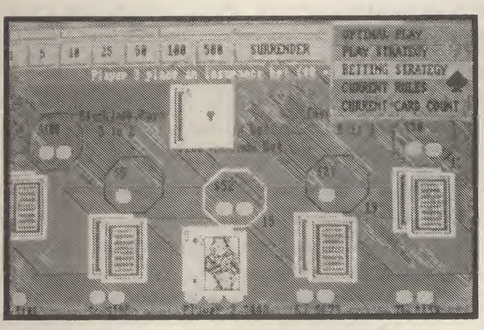
Card School

The third game is totally different again. *BlackJack Academy* (£24.99) is as the name suggests, a simulation of that well known gambling game better known as pontoon on this side of the Atlantic.

There have been many blackjack simulations available before and you may well wonder who is going to fork out nearly twenty five pounds just so that they can play a game where the focal point of interest i.e. the gambling has been removed.

Anyone who has ever played blackjack in a casino or is likely to do so at some stage could be well advised to take a look at this package. Blackjack offers the gambler who knows what he is doing, the best chance of making a steady profit (or minimising his losses) at any casino game. This package reckons to be able to teach you how to play with the odds on your side.

No, it doesn't offer you an infallible system, there isn't one. (The only system that is guaranteed to work in any game of chance involves the constant doubling of your stake and that usually falls foul of the house limit.) What it will show you is how to make the best use of the cards dealt to you and a simple counting method that show when the pack is likely to favour a larger bet.

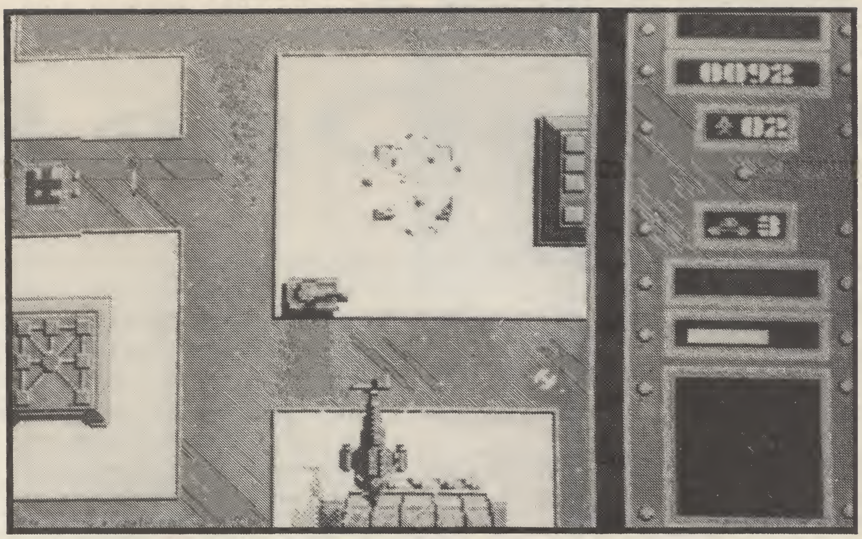


House Rules

The first thing to get used to is casino rules which tend to be very different from the pontoon that you are likely to play with your mates during the lunch hour. No five card tricks here, no burning on thirteen or fourteen, no ties pay the dealer etc. etc. Instead, there are strict rules as to what the dealer can or can't do. For example, he has to twist on sixteen and stick on seventeen. This removes the chance that the dealer is able to read the backs of the cards or whatever.

The package allows you to amend just about every conceivable parameter within the game including a great many that I had never even heard of before. Number of players, number of decks being used, which set of rules are being used (they vary from state to state), minimum and maximum bets and so on.

Throughout the game, you ask for tips on the optimum play on a particular hand. Should you split your cards, take insurance bets stick or twist or even stand or hit to use the American vernacular. There are hints on betting strategy and tips on how to not give away to the dealer the fact that you are counting the cards — if he suspects from your betting pattern that you are counting, he will shuffle the cards more frequently.



I must confess that I never knew that there was this much involved in playing blackjack. As a simulation, the Academy is superb and anyone who enjoys the occasional flutter could do very well to check out a copy. After all, you don't know how quickly it might pay for itself the next time you're in Vegas.

Bang Bang You're Dead

The final game looked at here is *Firepower* (£19.99). This offers a combination of strategy and arcade action in a modern setting tank battle. Again, you can play against the computer, human or modem opponent.

The object of the game is to eventually capture your opponent's flag but there are sundry other tasks and hazards before you get to that stage. Prisoners must be rescued, helicopters and gun emplacements destroyed and, of course, your own base defended.

You have a choice of tanks at the start of the game but you don't get something for nothing and must decide whether speed, armour, fuel or firepower is the most important factor. For example, a fast tank has less armour and can carry fewer prisoners which in turn means that you will have to make many more journeys.

Leaving your base, which you need to return to when you want to refuel, you should first locate your red cross area as it is here that you must return with your rescued prisoners. The playing area is littered with mines that should be given a wide birth as you make your way out of your protected area.

There are a variety of gun forts and emplacements waiting to blast you to bits. A quick bit of trigonometry might prove useful here as you discover that there are only certain angles at which some of the guns can fire so that it is perfectly possible to shell them in perfect safety.

Split Personalities

The game is presented as a top down view with a split screen so that the two opponents can monitor both their own and their enemy's moves. The game plays very well and I much preferred it to the other two player game *Galactic Invasion*.

Of the four games, *Galactic Invasion* is undoubtedly the weakest although it is still not too bad for all that. The other three I can heartily recommend. There should be something here that appeals to most game players and I eagerly await the next *Microillusion/Activision* releases.

Publisher: **Microillusions**
Supplier: Activision
23 Pond Street
Hampstead
London
NW3 2PN

CLI–One Step AtA

Get to grips with the more daunting user surface on the Amiga in the form of Command Line Interfacing with Burghard-Henry Lehmann

■ **Since the invention of computers,** hardware developers and programmers alike have been grappling with a major problem. How can we mortal human beings best communicate with them data crunching machines?

In the very early days of computing there was only one extremely laborious way of communicating with a computer. This entailed the programmer making up long lists of binary numbers and then entering them painstakingly into the computer by toggling a series of dip switches, each one representing a binary digit and one representing the return key.

The introduction of keyboards and programming languages made things much easier. But it still prevented a lot of ordinary people from using computers. "Keyboard phobia" is still a major obstacle to Mister average getting comfortable with a computer.

Rank Xerox then came up with the clever and graphic orientated WIMP system (Windows-Icoms-Mouse-and-Pulldown-Menus Environment). This made computers much more accessible to the technical feeble layman.

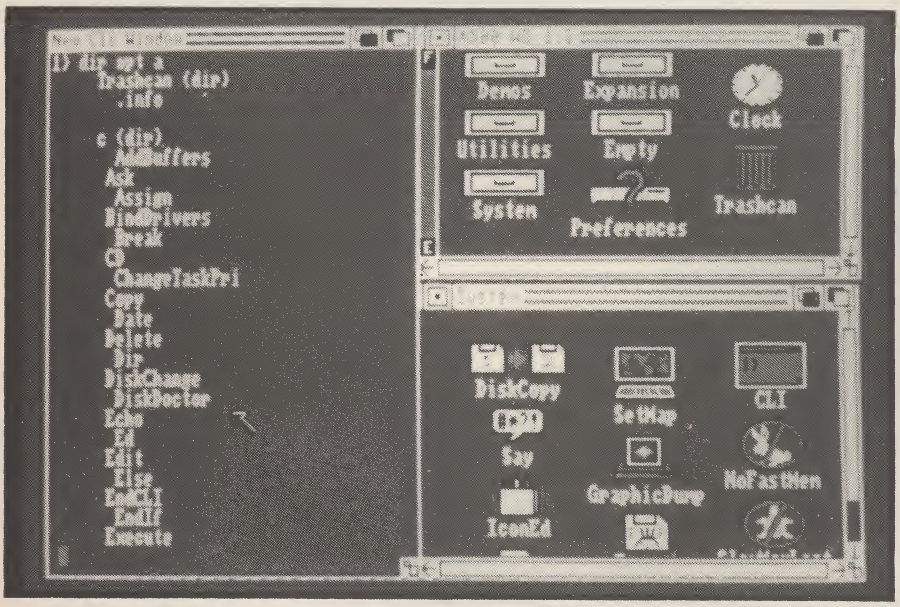
The future now lies in verbal communication with computers. This might well lift the final barrier between computers and ordinary people, but it is still some way off.

Communicating with the Amiga

The Amiga has two "user interfaces" or "user surfaces", as they are also called: The first and most convenient is called "Workbench" (or "Intuition" — in the Amiga Reference Manual) and the second is "CLI" (Command Line Interface).

Workbench is a WIMP system and the first means of communication you meet up with when booting your Amiga. The beauty of Workbench lies in its simplicity and extreme user-friendliness. Everybody who can use a mouse, with the help of Workbench, can do useful things with the Amiga in next to no time.

But as likeable as the Workbench is, for the more sophisticated user, it has its limitations. For example, if a file on a disk hasn't got an icon you won't see it on Workbench! So if you want to obtain more comprehensive information about what's on a disk, handle more involved disk operations, get a hardcopy of the contents of a directory and more, you have to start using CLI.



```
1> dir opt a
     Trashcan (dir)
       .info

     c (dir)
       AddBuffers
      Ask
       Assign
      BindDrivers
       Break
      CD
       ChangeTaskPri
      Copy
       Date
      Delete
       Dir
      DiskChange
       DiskDoctor
      Echo
       Ed
      Edit
       Else
      EndCLI
       EndIf
      Execute
```

What is CLI

CLI is comparable to the more traditional method of communicating with a computer via the keyboard. You type in what you want the computer to do and then the computer either executes your command or tells you that it can't understand it.

This is similar to the way you communicate with, let's say, the Commodore 64. The only difference is that with the Commodore 64 you give direct commands which are part of the BASIC programming language, while CLI on the Amiga can't be called a programming language, because the commands aren't very good at building up into a program which the computer executes.

Instead CLI works only one step at a time: you tell the Amiga what you want to be done and then the Amiga does it. Then you give the next command, this is executed and then the next one, and so on. CLI is mainly used for disk operations, as it provides access to the Amiga Dos operating system, which is really the main operating system of the Amiga, because on the Amiga the disk drive is an integrated and vital part — unlike on the Commodore 64, where the disk drive is just one of the many peripherals. An Amiga without a disk drive wouldn't be much good to you. That's why you can't get one!

This brings me to another important point concerning Amiga. It's a computer which, is at its most convenient to use, when you've got two or more disk drives. When you start using CLI you will find out why very quickly.

Unlike other such operating systems CLI is not memory resident in a ROM-chip. It comes on the Workbench disk which isn't even loaded in completely when you start. Instead each CLI command is accessed from the Workbench disk. So if you use CLI to look at another disk, you will get a requester after every command to put the Workbench disk into any drive — that is, if you've only one inbuilt drive.

This means you have to change disks an awful lot when using CLI, and this can become one of the major frustrations that put single drive users off from exploiting the potentials of CLI to the full. Furthermore, it can also result in a whole disk being messed up if you change disks too quickly and don't wait until the green drive light is off! So, watch this at all times! Fortunately there is a way of taking some of the fear out of this situation for all you people out there who, like me, still have only one disk drive.

tA Time

RAM Disk

You may have noticed that after you've booted Workbench there appears not one, but two disk icons on the screen. The first of these icons is called RAM disk.

RAM disk is not really a disk at all but an area in memory which is used in a similar way to a disk: You can save files onto RAM disk, sort them into directories and access them in the same way as you would access a file from a disk. The main advantage is that everything executes almost immediately, because RAM disk is really resident in memory.

So if you want to spend a long session using CLI and have got only one disk drive, the first step you should take is transferring CLI onto the RAM disk. But, unfortunately, you can't do this from Workbench by moving the CLI icon into the RAM disk icon.

This brings me to the first job we have to tackle before being able to use CLI. How to start CLI from Workbench.

Starting CLI

If you have never used CLI before, you will have to call up preferences in the first instance. There you'll find a window which lets you click CLI on or off.

Workbench is shipped with CLI turned off (don't ask me why. . .), so your first step has to be to turn CLI on by clicking the ON-window. It will turn orange. Next save preferences by clicking the appropriate window. There is really no reason to have Workbench disk where CLI is turned off, except for one where you have deleted the CLI files in order to make space for a large program.

Next double click the system drawer in the Workbench window. When the system window has been opened, you'll find an icon called CLI. Double click this one and the CLI window itself will be opened. Now you are ready to use CLI.

The first thing I would advise you to do is enlarge the CLI window so that, if possible, it takes up the whole of the screen. The reason for this is that CLI has only a line editor, and not a screen editor. This means that you cannot move the cursor up or down and if for example, a directory is listed and there is no more space on the screen, the top lines are scrolled out of the screen and there is no way to recover them short of giving the command again. So it is a good idea to have the CLI window as large as possible.

Next, if you are a one disk drive user, you are advised to transfer the CLI commands onto the RAM disk. This brings us our first CLI command.

When CLI window has been opened, you'll find on the top left hand side of it a "1 >" and next to it an orange cursor. As I've said, you can move this cursor left or right, but not up or down. The "1" stands for "CLI window number 1". Since one of the main advantages of the Amiga is its multi-tasking capability, you are able to open an indefinite number of CLI windows, the second one being numbered — as you would expect — 2, the third one 3, and so on. This is useful if you use CLI for running several programs in parallel. Each one of these programs then has its own CLI window. More about this later.

Copying CLI Onto The RAM Disk

Now let's enter our first CLI command which will copy the CLI commands onto the RAM disk. Using the keyboard type in the following line:

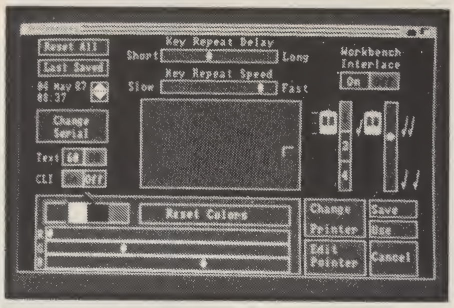
copy c to ram:

Please type this in exactly as given, not forgetting the spaces between each word. Also, don't forget the colon immediately after "ram"! This bears a special relevance, meaning that the word or words before form the overall name of a disk (in our case: "RAM disk").

CLI doesn't make any distinction between lower and upper case letters. So, for convenience's sake, type everything in lower case. But you could just as well use all upper case letters or intermix the two cases in any way you like. The CLI interpreter will execute your command just as well! Now press return.

If you have typed the command in exactly, the Amiga will now begin to copy all the CLI commands onto the RAM disk, printing out each file on screen as it goes along. You have just executed your first CLI command successfully! If you've made a mistake, the Amiga will give you an error report: "Unknown command. . ." or "Can't find. . .". If you are not quite sure what this error report means and why it has been given, type "**why** <return>".

The computer will now do its level best to tell you why it couldn't execute your command. Sometimes this is helpful, but most of the time you'll get the standard error report. "The last command did not set a return code", which is a very pretentious way of telling you that you've got it wrong. . . Now let's look a bit closer at our first CLI command.



Command Words, Syntax And Names

Like BASIC, CLI consists of certain commands, these commands are written in a set order and are separated by spaces or syntax signs, like "/" or ":" which have a specific meaning. Furthermore, you enter the name of a file or a disk which is relevant to what you are after. Lower or upper case doesn't matter on CLI. Therefore, "Copy of A500 WB 1.2" is treated the same name as "copy of a500 wb 1.2".)

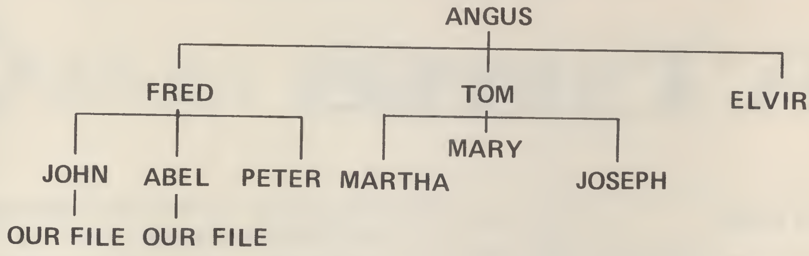
The first CLI command line we have entered contains two commands; one syntax sign and two names. The name of one of the directories on the workbench disk is "c", namely the one which contains the CLI commands. (As we will see in a minute, the Amiga Dos operating system allows you to structure the contents of a disk into an indefinite amount of directories, and not just one directory as with the Commodore 64.)

"Ram" is short for "RAM disk", and, as I've said already, the colon after it has a special meaning. It tells the system that the name before it is the name of a disk, not of a directory. Please note, that this colon has to stand immediately after "ram". If you put a space between the two, CLI would assume that there is a space after "ram" and won't recognise the disk you are after!

Given the above information, the meaning of our first CLI line should by now have become quite clear. We instruct the computer to "copy" the "c" directory "to" the "ram" disk. If you have grasped this, you've already grasped the standard way in which CLI commands are given.

A Multitude Of Directories

To go further we need to understand a bit more about the way in which Amiga DOS structures a disk. On the C64 you've got one directory on each disk (or side of a disk) and this directory consists of so many files. Amiga DOS, on the other hand, uses a far more sophisticated sysem. Instead of allowing only one directory per disk, it allows an indefinite amount of directories and sub-directories. In this way a disk is structured like a tree. On top of this tree you've got the overall disk name or "root directory", as it



POSSIBLE TREE STRUCTURE OF AN AMIGA DISK

is also called, and underneath it you've got a structure which is branching out even further, each branch consisting of another directory or a number of files.

For example, your root directory might be called "Angus". Further down you may have three directories, called "Fred", "Tom" and "Elvira". Even further down, "Fred" may consist of three more directories, called "John", "Abel" and "Peter", while "Tom" consists of "Martha", "Mary" and "Josepth", and so on.

Every one of these directories can have more directories or one or more files. The reason for this kind of structure is that you can have several files and sub-directories, for that matter, with the same name on the same disk without the computer confusing them. For example, sub-directory "John" may contain a file named "Our File", while sub-directory "Abel" may also contain a file named "Our File". The two files won't be mixed up by the computer, because the first "Our File" is sorted under the sub-directory "John", while the second "Our File" is sorted under "Abel".

But all this means that accessing a file (or a directory) on the Amiga is not as straightforward as it is on the good old Commodore 64. To access a file, you have to tell the computer which path it has to take on the tree of directories in order to get to the right file or sub-directory you are interested in.

The Current Directory

To understand this in a practical way, enter the following short CLI command: **cd**
In all likelihood the computer will give you the following answer:
Copy of A500 WB 1.2:
This is of course the name of your Workbench disk, that is, if you have made a copy of it, as instructed in the manual, otherwise the name will be "A500 WB 1.2:".

This is what is called the**"current directory"**, and **"cd"** is the abbreviation for that and, used as command without a name, as we did above, gives you the name of the current directory. "copy of A500 WB 1.2" is also called the "root directory" because it is right at the top of the tree of directories. One says that this directory has "no parent", meaning that it isn't a sub-directory sorted under another directory.

The colon after the name tells you that we are indeed dealing with a root directory. Any directory named after this colon would be a sub-directory. The command **"cd"** can also be used with a name after it. To understand this, enter the following line:
cd ram:
Please note, if the name consists of several words you have to put the whole thing, including the colon, into inverted commas, e.g. **'cd "copy of a500 wb 1.2:" '**! There are also other occasions where it is a good idea to put the name into inverted commas. One of my disks has a name with a space in front of it. Maybe the author did this in order to make it a bit more difficult for the novice to list the contents of this disk. But if you put the name into inverted commas with the trailing space, CLI will identify the disk properly! Again enter **cd**. Now the answer will be: **"ram:".**

This is because the RAM disk has now become the current directory, as opposed to "A500 WB 1.2" which was the current directory before. "What's all this good for?", you may ask. Let's find out by entering the following command:
dir
This is short for "directory" and will result in the contents of the current directory, names only being listed. In this case it will print the names of all the files we have copied earlier into the RAM disk.

Now enter **cd "copy of a500 wb 1.2:"** which will change the current directory back to the workbench disk and then enter **dir** again. The computer will now give you the listing of another directory, this is the directory of the Workbench disk.

So, **"cd"** without a name informs you of the name of the current directory, while **"cd"** followed by a name sets the current directory pointer to the name of the directory you gave after **"cd".**

If you now insert any old disk into your drive and enter **"dir"**, you would get a requester telling you to insert the workbench disk into any drive. Then the computer would again list the directory of the Workbench disk and not the directory of the disk you inserted before! It refuses to give you that directory because the current directory is still the Workbench disk. Only by changing the current directory pointer to the disk you want to look at, will enable the computer to give you the directory of that disk!

This is a very important point, as this mechanism is a source of endless confusion and frustration for the CLI novice. "Why, oh why doesn't it give me the directory of the disk I have inserted", the frustrated user asks. The reason is simple — you haven't changed the current directory pointer to the disk you want to look at! Therefore the computer gives you only the directory at which cd is pointing at!

There is a more convenient way to change the cd pointer to the disk of your choice: Enter **"cd df0: <return>".** "Df0" stands for "drive 0" which is of course the inbuilt drive. The command **"cd df0:"** will set the cd pointer to any disk in drive 0. But this only works if you've got two or more disk drives or have transferred the CLI commands onto the RAM disk as described earlier! Otherwise the computer will ask you to insert the Workbench disk and set cd to that! If you've got more than one drive you can use **"df..."** of course to identify the drive you want, by entering **"df1", "df2"** and so on.

You can use use **cd** to make any of the directories on a disk into the current directory. For example, enter **'cd "a500 wb 1.2:c" '.** Then enter the **"dir"** command. (You can give the same command also by simply entering **cd c**.)

Now the contents of the c-directory which we copied onto the RAM disk earlier on will be listed because cd is now pointing at the c directory of the Workbench disk. In other words, it is pointing one branch further down the tree of directories.

Finally, enter **cd "copy of a500 wb 1.2:devs/keymaps".** Now we have gone even further down the line. We've set a part which leads the computer first to the "devs" directory on the Workbench disk and then to the "keymaps" directory which is a sub-directory of "devs". **"/"** is used as a syntax sign to make this clear. It separates a directory from its lower sub-directory.

More To Come

In this article I have only just touched the surface of using CLI. Over the next few months we will be taking things a lot further — so keep your CLI disk handy. ■

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CINEMAWARE

Cinemaware has rapidly gained an enviable reputation for innovative entertainment software. Gordon Hamlett went to talk to Bob Jacob, the man who started the company, as well as casting a critical eye over their games.

Cinemaware has certainly made an impact on the UK market, from the quality of the programs that you produce it would seem that it is a fairly large company. **Just how big is Cinemaware?**
There are about forty employees. I am in charge of product development and my wife runs everything else. Last year, we had sales of ten million dollars with about 80 per cent of that market being in the US.

What did you set out to accomplish with your games?
I have not actually enjoyed most of the games that passed through my hands even though I was trying to sell them! They were either too mindless or too complex. I couldn't be bothered wading through a 40 page manual, mastering hundreds of keystrokes and decided that I wanted something that was easy to get into and above all, playable.

What makes your games stand out from the crowd?
That's difficult to pin down, there are lots of reasons but the main one is concept. The idea behind the game has got to grab peoples' attention. For example, I just don't find naval simulations interesting. They might be excellent games but I just don't want to go and play them. After the concept, artwork and then sound are becoming increasingly important. In Stooges, more than one megabyte of memory is devoted to sonics with more than 160 digitised sounds.

What are your favourite games?
On the computer, *Rocket Ranger*. Away from the world of the microchip, I used to play alot of tournament bridge but I no longer have the time. (a man after my own heart — GRH.)

Despite the fact that it won all sorts of critical acclaim, I felt that *Defender of the Crown* was not very well implemented on the Amiga (see below) being both bugged and limited in gameplay. Do you have any comments?
I have to agree with you, I was not too impressed. What happened was that I suddenly lost two of my programmers and there was an unbendable date that I had to ship the product by. The game ended up being written in only six weeks. If you want to see the definitive version, take a look at the ... (name of rival computer deleted here — Ed). As for the limited gameplay, our games are not designed to be over challenging.

How long does one of your games normally take to develop?
At the moment, about a year but the time span is increasing all the time. All of which costs money. *Rocket Ranger* cost about $150,000 to develop. A typical team consists of two programmers, two artists, one person working on sounds and of course the games designer.

Are there many differences between the US and UK markets?
The main one is that of age. The average age of one of my customers back home is 32. Over here, the games market tends to be aimed at a much lower age group. I think that shows in the types of games being written on either side of the Atlantic.

What is going to happen to the games industry in the future?
I think that the computer will become obsolete, perhaps as soon as 1991. Everything then will be based on compact disk technology. Interactive entertainment will be the buzzword then.

Are you working on interactive CD games now?
Yes!

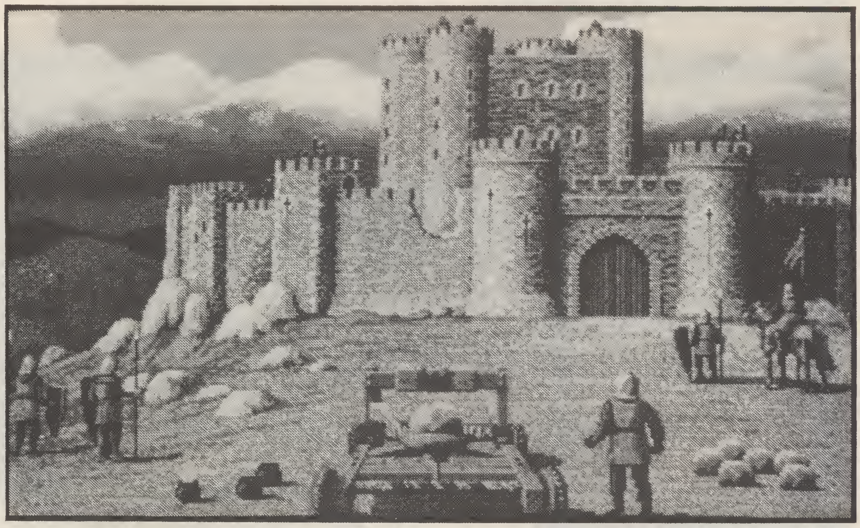
What do you like best about this industry?
Living on the edge, both creatively and technically.

And least?
The industry tends to be incestuous in nature. People move around from company to company taking their ideas with them. This inbreeding leads to a few fresh ideas — that sell.

Is piracy a problem?
Yes, but you just have to bite the bullet.

What if someone wants to work for you?
We are actively looking for new products at the moment. There is some excellent programming talent in the UK. What we are not short of is ideas; we are looking more for program development teams.

What can you tell me about your new products?
The Three Stooges should be available as you read this, with *Rocket Ranger* on sale in a couple of months. Our next title is *Lords of the Rising Sun*, a strategy conquest game set in twelfth century Japan.

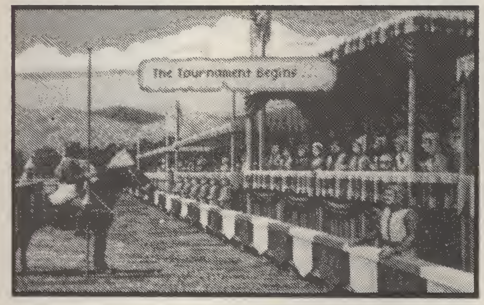


Off to the Flixs

There have been four titles released so far under the *Cinemaware* label, with a fifth game — *The Three Stooges* due for imminent release but sadly not quite available at the time of going to press. Look out for an in-depth review in the next issue. A sixth game, *Rocket Ranger* is due for release sometime in the summer.

Fame and Fortune

Of the four games so far let loose on the unsuspecting public, by far the best known of these is *Defender of the Crown*. Set in the Middle Ages, the game pits Norman against Saxon in an attempt to gain control of Britain during the period immediately after King Richard's demise. This brings in the opportunity to introduce Robin Hood, albeit in a supporting role. Not exactly historically accurate but that's Hollywood for you.



You select one of the four Saxon knights (the Brits always did love an underdog) who have differing skills in swordplay, leadership etc. The eventual object is to occupy all the counties of Britain (England and Wales) and thus be crowned King.

The game opens with a map of Britain, and six kings sitting in their own castles. This is the opportunity to win some extra territory for yourself without too much hassle from the others. More land means more income and the chance to develop your army faster. At the beginning of each turn, you get the opportunity to spend your income on soldiers, knights, catapults or even new castles. These men can either be left to guard your home base or taken raiding with you.

Occupation of an empty county is normally a matter of just moving into it. The only problem comes if somebody else decides to do exactly the same. Then it becomes a case of whose is the biggest army. The presence of knights is usually decisive here.

Income is never sufficient so it may prove prudent to go raiding one of your enemy's castles in search of extra cash. This involves you fighting your way through courtyards, sword in hand until you reach the treasure chest. There is a lovely bug here, when your shadow proves that it has a will of its own by passing behind a pillar that you are walking in front of. These same techniques apply if you get called on to rescue a fair Saxon maiden only on this occasion, instead of stealing gold, you get to steal a kiss instead before holding hands and walking off into the sunset ....Ah!

For those of you adept at arcade sequences, you can always try your hand at jousting, either by holding your own tourney or attending someone elses. The tip here, especially if like me you are something of a duffer in these matters is joust for the glory only. Don't risk losing your land.

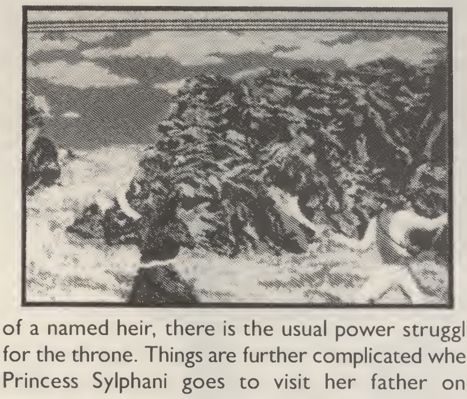
The quickest way by far to gain extra land for yourself is to lay siege to someone's castle. If you win, not only do you get to keep the castle, but also all the land associated with it. Laying siege requires a catapult and a fine touch as you try to knock holes in the walls of the castle in front of you. Succeed and it becomes a battle of the armies again to see who gains control. Fail and you have wasted another turn.

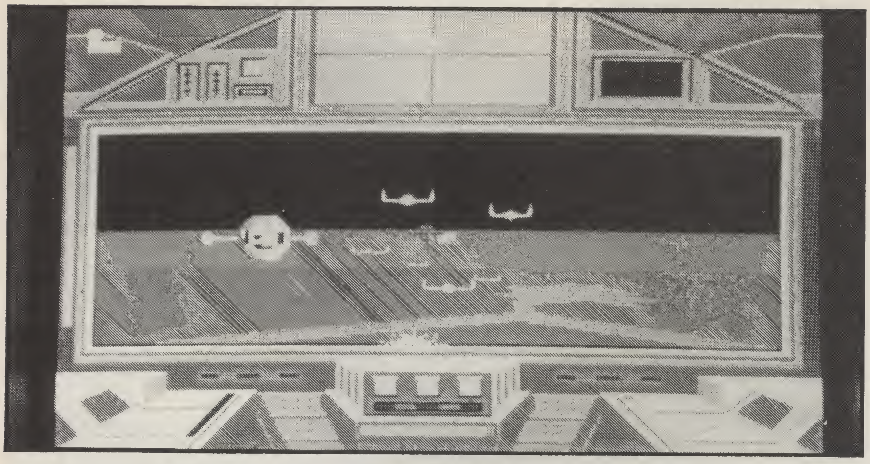
The end of the game is something of a disappointment. As at the cinema, the screen comes up with 'THE END'. A pity there was no sequence of the crown being lowered onto your head complete with Saxons toasting you with tankards of foaming ale. Despite some superlative graphics (quite the best that I have seen to date), the gameplay is limited. There is no need to go jousting and I never felt the need to call on the services of Robin Hood and his merry men. Another bug sometimes manages to duplicate your army which can prove decidedly helpful. Nevertheless, this is one game that every Amiga owner should make a point of seeing.

Arabian Adventures

Sinbad and the Throne of the Falcon puts you in the part of the most popular hero from Scheherezade's Tales from 1001 nights.

The caliph is getting old and, in the absence of a named heir, there is the usual power struggle for the throne. Things are further complicated when Princess Sylphani goes to visit her father one morning and discovers that he has been transformed into a falcon. She begs you, Sinbad, her old friend to come to her aid.





Your task is twofold. Not only have you got to discover the means of changing the caliph back to his human form again, but you also deploy the cities armies against the forces of the Black Prince Camaral.

Examining the map of the world through a magnifying glass shows details of all the towns that you may have to visit. Some can be accessed from your home base but most will require a sea voyage. When you land in order to go exploring, you must decide how many of your crew to leave aboard in order to protect your ship, the Sabaralus, from pirates. Lose your ship and it is effectively game over time. You will also get the chance to recruit new crew members although this is best done in big cities.

There are several characters that you must seek out fairly quickly if you are to succeed in your quest — the gipsy, the genie and the shaman are the most important. Once found, they can be questioned. How you do this is up to you. A pull-down menu gives a list of the various questions that you can put to the person and this leads you down several different pathways. I suspect that British manners are slightly different from those of our American cousins. Having persuaded the gipsy to give me some magical potion, I ended the conversation with what I thought was a polite 'Oh you shouldn't have.' 'All right' said the gipsy and took it back again!

You will have to do battle with various fabulous creatures — swords against lions, a sling against the cyclops and a crossbow against the Pteranoxos. This is a large prehistoric bird that is spying for the Black Prince. Shoot him down and you remain undetected. Let him get away ....

While all this exploration is taking place, you must also take part in a miniature wargame as you try to defend your city. There are six supply bases that are the key to a successful defense. Letting the enemy control these is likely to prove fatal. This part of the game isn't difficult, it is just that you tend to forget about it.

The graphics tend to be somewhat blocky compared to other *Cinemaware* products and this detracts somewhat from the game. Nevertheless, there is alot to do in the game and I have come nowhere near succeeding yet. One that I will definitely go back to when I've got the time.

Sci-Fi Shoot'em-up

S.D.I. is a totally different kettle of fish, being the only arcade biased game among the first four. Based on President Reagan's Star War program, the game puts you in the role of Sloan McCormick, a captain in the Orbital Marines.

The year is 2017 and the Strategic Defense Initiative system is now almost fully functional. A hard core element in the Kremlin sees this as being their last opportunity for world domination and civil war breaks out in the USSR as the hawks and the doves battle for supremacy. Backed by the KGB, the hawks gain the upper hand and take control of the spaceports and missile sites. The doves appeal to America for help and pledge their full support mainly in the form of one Commander Natalya Kazarian who just happens to be your lover. Strange isn't it that both Superpowers have to rely on just one person in times of international crisis.

As well as flying round the earth blasting all the Russian attack fighters out of the skies, you must naturally defend the good old US of A. This involves repairing any damaged satellites and protecting your homeland from incoming missiles. This cannot be achieved from your ship so you will need to dock with the space station first. This is not necessarily an easy manoeuvre when under full attack. Once docked, you can take the opportunity to repair any damage and refuel. Once incoming missiles are detected, you only have two minutes to disable them. This is done by choosing between primary and secondary satellite sequencing (primary is more effective but secondary is the only option if the primaries are damaged). You also have the choice between full beam or pulse. Pulse is more difficult but does allow multiple shots.

Apart from saving your country, you will also have to fight your way into the Russian station when that is overthrown. The prize at the end of this is the rescue of your beloved one. All that remains to be done now is finish off the rest of the Russian fighters, collect the thanks of two grateful governments plus one grateful girlfriend and get back in time for supper.

Graphics are again excellent, both in the action screens and some of the stills. Gameplay is considerably trickier than in the other games and the combination of joystick and keyboard controls goes somewhat against Bob Jacob's dictum (see interview). Had this game been called Space Defense or similar, everyone would have played and enjoyed it. As it is, there have been various rumblings about the politics involved, all of which is a trifle silly in what is, after all, only a game. If *Defender of the Crown* was available back in the thirteenth century, I daresay either the Normans or the Saxons would have been equally upset depending on their political background. I would suggest that you take it all with a pinch of salt and sit back and enjoy the game.

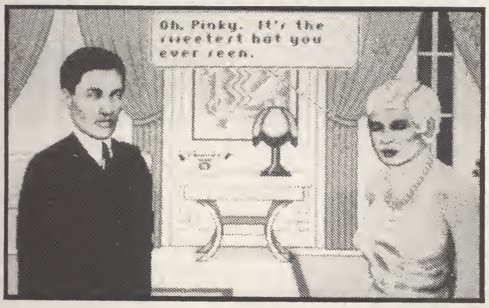
You Dirty Rat

The gangster movies of the 1930s is the setting for the fourth game. In the *King of Chicago*, Al Capone has just taken an enforced rest in the State Penitentiary and control of the city is up for grabs. The southside is controlled by one Tony Santucci; a man both devious and dangerous. The northside of the city is currently controlled by your boss but you are none too impressed with his handling of affairs. The city is in the midst of a bloody civil war

All Cinemaware games are available for
£29.99 from Mirrorsoft,
Athene House, 66-73 Shoe Lane,
London EC4P 4AB.
Tel 01-377 4837.

between the two factions. Your solution is simple in theory if not in practice. Drive Santucci out of town.

The first problem is obvious. You have got to become boss of your own gang. The Old Man though doesn't see you, Pinky Callahan as his natural heir. That position is supposed to be going to Ben, chief advisor to the northside mob. Ben is intelligent rather than violent though and may be persuaded to stay on in an advisory capacity. All that remains is to see that the Old Man meets with an accident. Naturally, the other lot will get the blame although you can be sure that most of them will have their suspicions as to what really happened.



Oh, Pinky. It's the sweetest hat you ever seen.

The game is a blend of strategy and action. You must manage the resources of your gang, pay their wages, organise bribes and make all the executive decisions. But you are also a man of violence, whether taking part in raids yourself or defending yourself against the various hitmen who are sent to wipe you out. Not all of these come from Santucci's mob. Let the business go to rack and ruin and you will soon find out that you don't have as many friends as you thought you had.

Not least among these is your bit of fluff, Lola. A peroxide blonde with big ... ambitions, she is out to take you for every dollar she can. The trouble is, treat her too roughly and she is likely to set you up. On the other hand, you will soon lose the respect of your gang if you don't show her who's boss.

Most of the decisions that you make are selected from multiple choice thought bubbles. You cannot sit around and think for too long though as the game is in pseudo real time and it will make its mind up for you. The main exception to the thought bubbles is the ledger.

The action can be of several varieties. The simplest is a one-to-one shoot out between you and the old man or an assassin hired to kill you. Then there are bombing raids and tommygun raids whether shooting locks off hotel doors or hoodlums in partially lit windows. It is no use just blasting away at random here. Whereas the police tend to turn a blind eye to gangsters shooting other gangsters, they object strongly if you shoot an innocent person i.e. a girl. Thus despite Tom Malone the cop being a childhood friend,.he had no qualms about arresting me. The scene of Pinky in the electric chair may not be to everyone's taste.

There are some nice digitised heads but they don't always look right on the cartoon bodies. That is just a minor point though and the game plays very well albeit somewhat slowly. You need two disk drives or one megabyte of memory to play and the claim is that the game runs an awful lot faster with the extra memory.

Slap Stick Fun

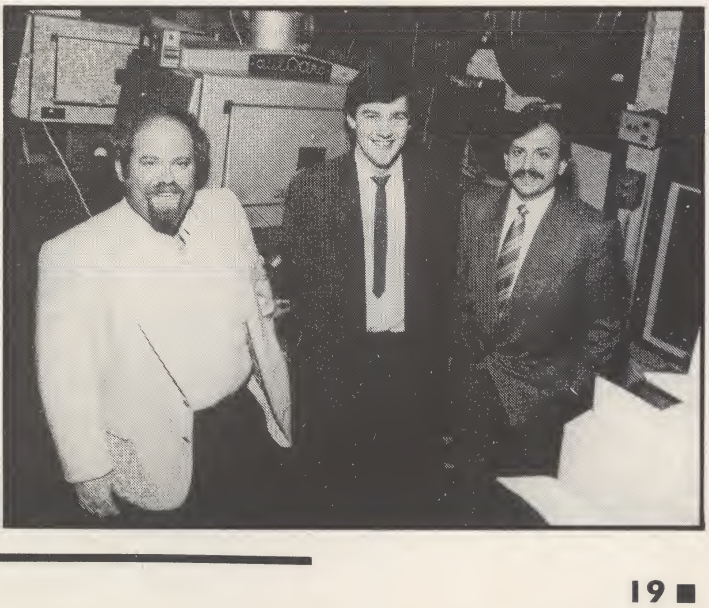
Of the games to come, *The Three Stooges* features the stars of the thirties and forties comedy films, Curly, Larry and Moe. They discover that Mr. Fleecem, the evil landlord is about to foreclose on the mortgage of the local orphanage. Our heros claim that they will raise the money somehow and are promised the added bonus of marrying Ma's three beautiful daughters if they succeed and there is enough money left over to pay for the weddings.

Among the possible earners available to the trio are throwing custard pies, eating crackers in a bowl of oyster stew before the oyster does, playing at hospital doctors and entering boxing contests. There is also a trivia quiz for film buffs.

Is It A Bird?

Rocket Ranger was one of the many Saturday morning cinema serials and is the setting for another of *Cinemaware's* future releases. The time is the Second World War but scientists from the 21st century have risked everything to send a rocket pack and ray gun back in time. The reason? They live in a future built on a Nazi victory. Can Tom Cody save the world?

The Nazis are mining tons of a rare element lunarium, found only on the moon, which they are using to manufacture special bombs. If Tom is to succeed, he must battle against Zeppelins, destroy South American temples, fight guards, escape from captors after being interrogated and finally make his way to the moonbase for a final confrontation. Only sample screens of this game have been seen, but it looks very promising.



I Love To Go A Wandering

It's a brave company that produces a follow up to what must be the World's best selling adventures, Zork. Infocom , not to be put off, has taken sword in hand and produced Beyond Zork. Gordon Hamlett sees if it lives up to expectation.

There tends to be a nostalgic gleam in the eye of adventurers everywhere at the mention of the word Zork. Infocom's first three games quickly established themselves as classics and there can't be many people left who have never had a nasty encounter with a grue. The good news is that Zork is back although in a somewhat different form as Infocom launch their first role playing game.

The game breaks new ground in so much as it is not like a full blown rpg such as Ultima or the Bard's Tale where you just tend to go round hacking everything to bits until you are powerful enough for the final confrontation. Instead, the emphasis is still very much on problem solving. So don't go expecting very much in the way of graphics — there aren't any with the exception of a title screen — another Infocom first! You do however get an on screen map of your immediate surroundings although die-hard text only fans can switch it off.

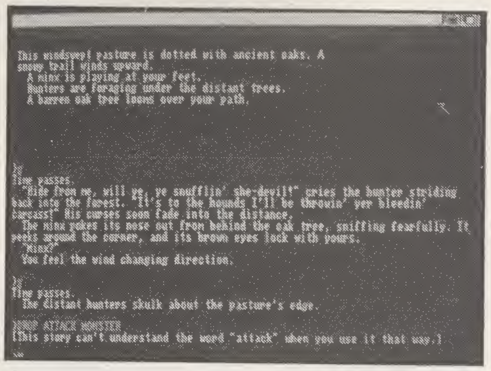
The Story

All the wizards have mysteriously disappeared from the Kingdom of Quendor. Villages lie deserted and strange and ferocious monsters inhabit the countryside. Even the Enchanter's Guild has been abandoned. All of which means that it falls to you, a mere peasant to save the world and ultimately seek out the most fabled treasure of all — the magnificent Coconut of Quendor.

Each character is graded on seven different characteristics; strength, luck, endurance, compassion, dexterity, intelligence and armour class. Endurance is the important one to watch as when that reaches zero, you pay a visit to that great adventurer's guild in the sky.

Starting Off

You can start off with a predetermined character or set up your own, varying the attribute statistics as you see fit. Different tasks require different skills so it is important not to bias the scores too heavily.



```
This windswept pasture is dotted with ancient oaks. A
snowy trail winds upward.
  A minx is playing at your feet.
  Hunters are foraging under the distant trees.
  A barren oak tree looms over your path.

>z
Time passes.
  "Hide from me, will ye, ye snufflin' she-devil!" cries the hunter striding
back into the forest. "It's to the hounds I'll be throwin' yer bleedin'
carcass!" His curses soon fade into the distance.
  The minx pokes its nose out from behind the oak tree, sniffing fearfully. It
peeks around the corner, and its brown eyes lock with yours.
  "Minx?"
  You feel the wind changing direction.

>z
Time passes.
  The distant hunters skulk about the pasture's edge.

>ATTACK MONSTER
[This story can't understand the word "attack" when you use it that way.]
>
```

Completing different tasks may result in your attribute levels increasing or decreasing depending on what you do. For example, rescuing the baby hungus (a cross between hippo and sheep) will result in an increase in your compassion. Hacking it to bits with a sword might not have quite the same effect.

Magic plays an important part in the game. As well as scrolls, even the most mundane object may be blessed with hidden powers so it is always worth while getting someone to identify something for you. Most of the objects though can only be used a certain number of times before they lose their potency. Items can always be sold instead of used and you might decide that it is worthwhile to invest in a suit of armour or a decent sword.

Weapons have to be wielded if they are to be used successfully. Combat involves you trying to knock the living daylights out of a monster while it does likewise to you. As you get hit, your endurance decreases although this is only temporary. As you kill a few things, your experience increases and with it, your number of endurance points. At various times during the game, other attributes may temporarily go down. For example, you lose strength when you use a magic item.

Deja-Vu

The game retains all the usual humourous Infocom touches although location descriptions are not as long as in previous games. There are lots of characters and objects from previous games putting in a welcome appearance but it is not necessary to be familiar with the other stories to be able to play this one.

There are several new commands to play about with but most of these are cosmetic, changing the screen colours etc. There is an 'undo' command which might prove to be useful after an ill advised move although you can only step back one turn and you can't use it in combat situations.

Beyond Zork is a delightful game to play. The humour bubbles through and anyone who has been put off role playing games need not worry. The effect is more like a traditional adventure with a few extra bits added. To anyone who has played Zork, this game is a must for their collection and it also makes a splendid introduction to anyone who has not yet sampled Infocom's heady delights.

Beyond Zork

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Our Supplier: Activision
23 Pond Street,
Hampstead,
London
NW3 2PN.
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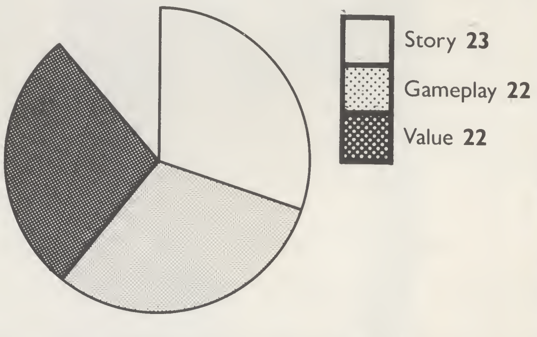
PRICE: £24.95.



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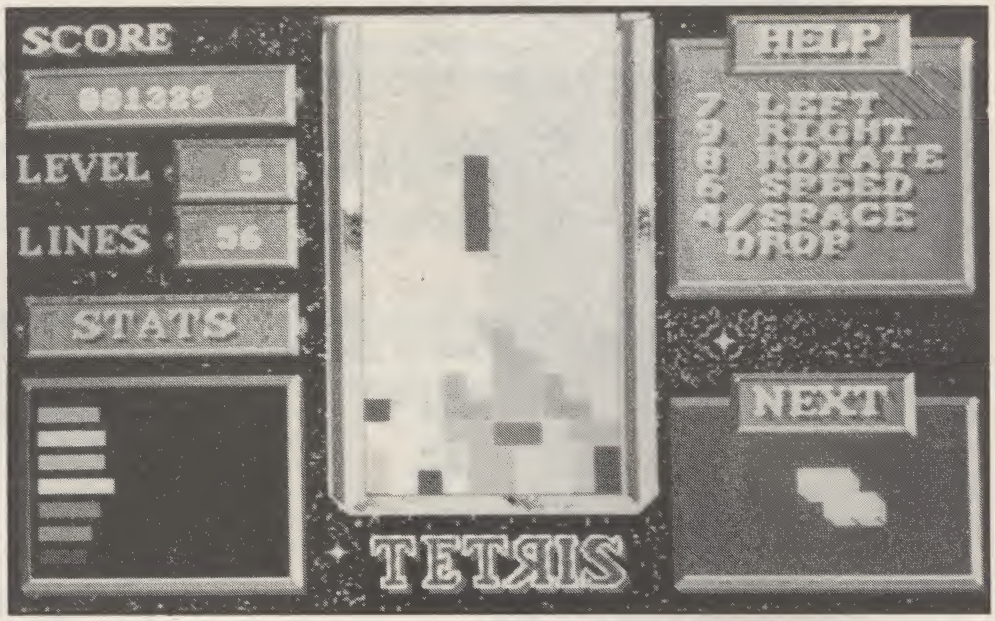
Building Blocks



Games don't have to be difficult or complex to be fun. Gordon Hamlett finds Tetris infuriatingly addictive.

■ **Just occasionally, a game comes along that** is so simple in its conception that you kick yourself for not having thought of it first. Such a game is *Tetris*.

The playing area consists of a large rectangle into which various shaped pieces drop. Your aim is to manipulate these pieces so that you complete a horizontal line across the screen. That basically is all there is to it.

Naturally, it isn't quite that easy. The pieces fit together well enough but unless you are careful in what you are doing, you find that you are leaving gaps which are not so easy to plug.

When you complete a horizontal line, it disappears from the screen. This is important as the fewer blocks there are on the screen at any given time, the more time you have to manipulate the falling blocks. The rate at which the blocks fall is determined both by your chosen starting level and your progress. The more lines you complete, the faster the game plays.

Jigsaw Pieces

There are only seven blocks for you to worry about, each one being four squares in area. Thus you have one long straight one, one square, one T-shape, two 'L' shapes (mirror images of each other) and two shapes that look like the shoulder flashes of the SS — a sort of runic 's'. These mirror images cause the greatest trouble as invariably, the one that you don't want is the next one to fall. You can switch on a display that indicates the next piece to fall and I would recommend that you do this. The game is hard enough as it is and this technique certainly helps as you plan the best strategy.

There are ten different skill levels but you get fewer points on the lower levels. Starting on level five, I can usually manage somewhere in the region of seventy to ninety completed lines. The end of the game tends to come quickly. When your patterns start to go astray, you soon loose control of the game. Ideally, you want to make sure that you never have more than one third of the screen filled up at any given time. Much more than that and it becomes worth while leaving a couple of gaps in order to get rid of a couple of lines.

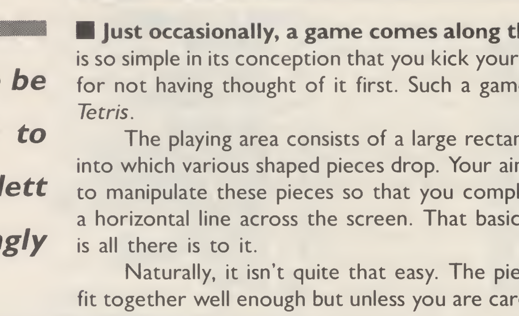
Graphics Aren't Everything

The graphics are crude but that's not important in this game as its the gameplay that matters. What is annoying is that the initial controls are poorly designed. Starting levels can only be adjusted from the numeric keypad. Why are there no pull-down menus or similar. This is the Amiga not the ZX81. Likewise, there is no pause; extremely irritating with individual games taking half an hour or so to play.

Despite these niggles, *Tetris* is an excellent game although one that is not likely to appeal to hardened arcade buffs. To anyone who enjoys exercising their grey cells, it is a mandatory addition to their games collection. ■

Tetris

Publisher: **Mirrorsoft**
Athene House
66-73 Shoe Lane
London
EC4P 4AB
Tel: **(01) 377 4645**



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Print Screens From Basic

SPIN
Disk Drive Cleaning Utility

POINTERBUILDER
Design, Save, Recall Pointers

POINTERXFILE
Call Unique Pointers in Basic

SMALLMEM
Running Account of Memory

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GOOD PUBLIC DOMAIN
What It Does,
Where It's Found

POINTERBUILD
Tutorial on Making Pointers

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Easy Docs

AMIGADOS PRIMER
The Topic: LIST

PD DISKS
New: Fish Disks Through 138

C-NOTES
C Language Series,
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Vol. 3, Issue 5, No. 22

JUMPDISK©

ALL NEW!
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16 Programs In this Issue

A Unique Feat:
JUMPDISK, the Original Magazine on Disk for the Amiga, has been published every month without fail since August 1986. And every month it gets better.

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Our theme for the May issue of JUMPDISK is the 'Virus'. To protect your software from the *new strains* you first need to understand how they function. The information we are providing is the most comprehensive and up-to-date published so far. The programs in this issue will, at the click of an icon, enable you to check and protect your software. The Virus is here to stay — there will always be someone trying to develop a new strain that is more dangerous than its predecessor — JUMPDISK will give you the tools to fight back.

The first JUMPDISK 'SPECIAL' is still available at the very special price of £5.00. If you order the MAY issue of JUMPDISK at the same time, then pay only £12.50. A saving of £1.00 if purchased separately. The 'SPECIAL' features: ★ **WORDRIGHT** — a full featured shareware word processor ★ HIGHWAY 3 — A graphics environment of a Highways Intersection's Modes ★ **CITY DESK DEMO** — A working demo of the well known desktop publishing program ★ **PATHETIQUE** — A music file that will run with DeLuxe Music Construction Set ★ **MANDELBROT** — An IFF file of a Mandelbrot example. ★ **THE ISSUES** — A catalogue of all 21 regular JUMPDISK issues published to date ★ Plus ART.

PUBLIC DOMAIN — UPDATE

New to the UK are PD disks recently received from one of the largest user groups in California. Titled F.A.U.G. they provide some of the best graphic and sound demos we have seen. They also include working demos of Pagesetter, Instant Music and many more commercial programs.

FISH 129
DosKwik V2.0 of a pair of programs which allow you to save files, or a group of files, to one or more floppies for quick loading (eg. loading up a ram disk).
MRBackUP V2.0 of a hard disk backup utility, that does a file by file copy to standard AmigaDOS floppy disks. Includes an intuition interface and file compression.
PaintJet An"official" Hewlett Packard PaintJet printer driver received directly from HP sources.
Patch Two independent ports of the very useful Unix utility "patch", which applies context diffs to text files to automatically update them.

FISH 130
DirMaster V1.1 of a very nicely done shareware disk cataloger. Lots of neat new features and enhancements.
Evo A human evolution toy/tutorial.I/S
Hp A nice RPN calculator program that supports calculations with binary, octal, decimal, hex, float and complex numbers.V1.0,I/S
Mach A "Mouse accelerator" program that also includes hotkeys, the features of sun mouse, clicktofront, popcli, a title bar clock with a bbs online charge accumulator, and more. V1.6a,I/S
PatEdit Pattern editor for creating patterns to input to the Amiga SetAfPt macro call.I/S
QMan Mandlebrot generator written partially in assembly for speed.I/S

FISH 131
Dfc Copies disks like Maurader, but multitasks. It even has a nice little Intuition Interface.I/S
HyperBase V1.6 of a nice little shareware database management system.
Life New version of Tomas's ancient Life game but with a new macro language for setting up patterns, some good examples, and some more good stuff.I/S
Mackie Popcli replacement that draws pretty lines on the screen in blanking mode.I/S
Mg1b A version of Mg1b with an ARexx port and other improvements. Finally you can define macros and bind them to function keys in your startup file!I/S
WFrags Another version of Frags, but this one pops up a nice little window that updates occasionally. Necessary for developers who wonder what their program is doing to memory, or wonder why they can't load their program.I/S

FISH 132
Berserk This animation, unveiled at a meeting of the F.A.U.G, got Leo a standing ovation. It's a must see for every user. The difference between this distribution, and the one on disk 100, is that this one includes "source". ie. it contains all the object descriptions necessary to recreate the animation. Thus you can, if you like, try modify various objects to create slightly different animations or use it as an example for creating your own. Requires 1 meg.

FISH 133
Conman V1.1 of extremely useful replacement for the standard console handler, that provides line editing and command line histories completely transparent to any application program tha tuses CON: windows. New features include additional editing keys, fast search keys, undo key, clear history command, and more.
Crc Two programs that are very useful for generating 16-bit CRC listings of the contents of disks.
CrcLists Complete CRC check files for disks 1-128 of the library, using the above Crc program.
overscan Patches the Intuition library so that sizeable windows with MaxHeight of 200 (400 in interface) and screens with Height of 200 (400 in interface) will take advantage of the PAL overscan capability of Intuition V1.2. This is useful for European users that wish to run software written for the American market, without modifying the applications, but still using the additional space.I/S

FISH 134
BoingTrows A 50 frame HAM animation done with Sculpt-3D, and minor touchups with DigiPaint. The animation took about 325 hours of runtime to generate!
Browser W/B tool, using text-only windows, that makes all files in the system accessible for executing, copying, moving, renaming, deleting etc. Billed as a "programmers workbench".V1.2
Dme V1.29 of Matt's text editor. Dme is a simple WYSIWYG editor designed for programmers.I/S
Find Utility which searches for files that satisfy a given boolean expression of attributes, starting from a root pathname and searching recursively down through the hierarchy of the file system.
Library Demo of a program that stores textual information without regard to structure or content, and allows complicated searching for specific patterns. Written in assembler for speed.
SmartIcon Is an Intuition objects inconifer, limited to iconifying windows, still very handy.

FISH 135
TeXF Section of 78 TeX fonts with a conversion program to convert them to Amiga fonts. There are 22 different fonts at various sizes, ranging from 15 pixels high to more than 150 pixels.

FISH 136
AsmToolBox An assembler "toolbox" created to make interfacing between assembler programs and AmigaDOS easy.I/S
Bison Replacement for unix "yacc" command.
Iff2Pcs V1.1 of an interactive puzzle program.I/S
Paste Version of the Unix paste utility. It concentrates corresponding lines of the specified files into a single output line.I/S
YaBoingII Game demonstrating hardware sprite usage, including collision detection.I/S
Zoo File archiver, much like "arc" in concept, but different in implementation and user interface details. Includes some nice features that "arc" lacks (such as file/path names up to 255 characters in length).V1.8

FISH 137
Ct Program to display images from a CT scanner, along with several interesting sample images of scans of real people, including a skull, brain, hart, and spine.
JeansIcons Miscellaneous cute icons created for AMUC's monthly newsletter desk.
Muncho Cute little program which plays a digitized sound sample when you insert or remove a disk from your drive. If you don't like the sounds you can replace them with your own. Good fun.
Sit Update to the Set Icon Type program from disk 107.,
VGad New gadget editor that takes two pictures of the window and its gadgets, one being the normal gadget state and the other being the fully selected state, and then merges the data and converts to C source code.
VirusX Boot sector virus check program that runs in the background.
VLabel Program to print fancy customised disk labels. Combines an IFF picture and up to 50 lines of text and then print the result. The IFF picture can be virtually any size (up to 1008 by 1000.Recommended.

FISH 138
AmigaLine Technical notes for Amiga programmers.
Diff Uses the same algorithm as the Unix diff program and also produces context diffs, suitable for use with patch.
Foreach Simple but useful program that expands a wild card file specification.I/S
MacFont Conversion tool to convert Mac fonts to Amiga fonts.
ModulaTools Various useful routines for those programming in Modula.I/S
Vt100 Two new versions of vt100 terminal emulator. One, based on vt100 2.6, has been enhanced to include an iconfy feature, add full 132 column support using overscan etc. The second is release 2.8 of the mainstream version of vt100.

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The Shape of Programming to Come

C is the fastest growing programming language today. Its recent popularity is an unprecedented move towards a new era of programming with what is destined to become the new 'BASIC' of the 16-bit world. Mark Burgess examines what C can do for us.

■ **Amiga owners will appreciate that in** recent times the press has displayed a mixed response over new products and new ideas on the computing scene. This is a trend which has been fuelled by the rapid development of new machines like the Amiga, which move away from the well established PC market. You can't teach old dogs. . . The C programming language has taken a slice of both the sweet and the sour. Some critics have rejected C in favour of the traditional, well-known, contender languages like BASIC and FORTRAN. It has been labelled terse and unreadable and has even been likened to a brand of computer hieroglyphics.

Other writers have hailed C as the new BASIC of the 16-bit world. This article is the forerunner to a series of articles on C programming for the Amiga which will help to cast light on the benign face of C as a 'new' language for the Amiga.

C is a general purpose programming language. Like BASIC, it uses high level words and symbols to provide a number of basic building blocks for writing programs. Many of the basic constructs of C are easily recognisable to a BASIC programmer:

```
printf ("..");
a = b;
string = "String Pointer";
```

C was originally developed in the 1970's with the aim of creating a portable language which would be used to rewrite the UNIX operating system, originally imprisoned within PDP-11 machine code. The language had to be both general enough to be portable and specific enough to be able to program an operating system with! The result was a derivative of Martin Richards' compiler writing tool BCPL, called C. UNIX was recoded, in C, by Dennis Ritchie and has since been ported across to a wide range of machines of all shapes and sizes.

Despite changes, C still bears many traits which betray its UNIX origins. Its commands and functions are abbreviated according to the UNIX philosophy and file nameing conventions are often derived from those of the UNIX compiler. It is the UNIX-like terseness of these names which has brought C under attack from some camps.

Why C?

Why should anyone abandon BASIC in favour of an unknown language?

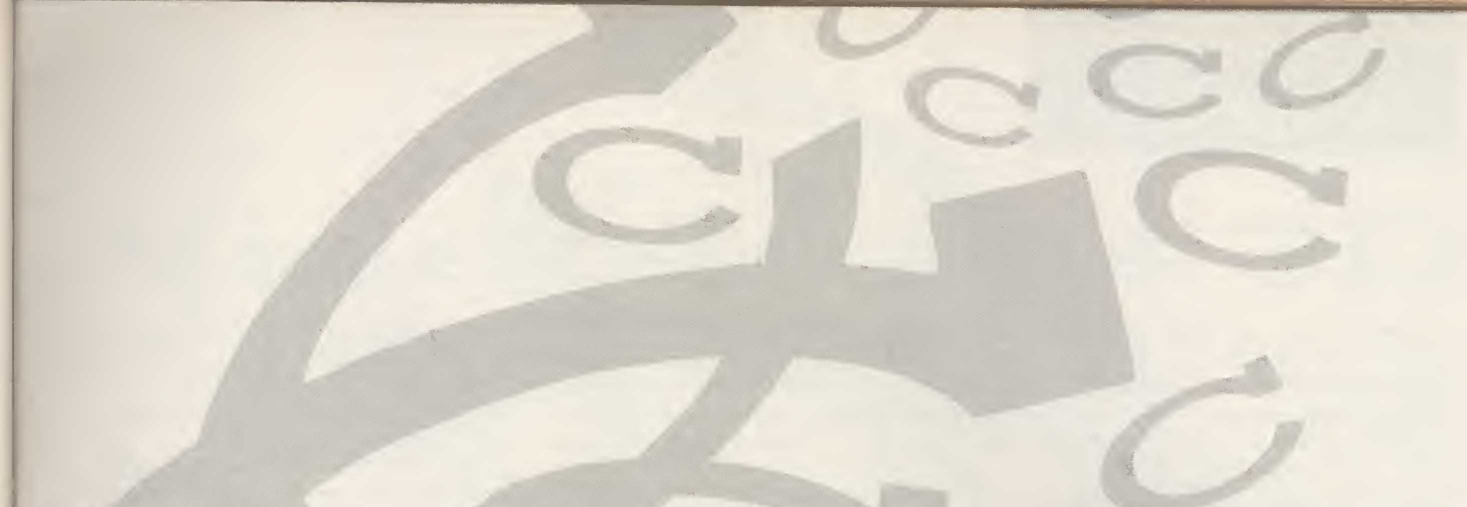
Perhaps C's greatest claim to fame is its speed. Programs written in C run typically between ten and fifty times faster than corresponding programs written in BASIC and several times faster than languages like Pascal or FORTRAN. There are two reasons for this: the first being that C is a 'compiled' language. A compiled language differs from BASIC in a fundamental way. When a BASIC program is run, the language looks at each command in turn and interprets its meaning. It then carries out the function of the command according to a predefined list of operations built into the language. For each new command, this cycle is repeated until the program is finished. This means that time taken to convert the program from word or token form into actions is added on to the time it takes to carry out the actions. In a compiled language, the act of converting program text into machine code is carried out for the whole program and the programmer is left with a machine code program which is completely separate from the original test.

Apart from this, C has the reputation of being faster than many other compiled languages. In truth this must depend upon the quality of its implementation, but the reason for the well-founded belief is that C is designed to include very few 'overheads'. C compilers are *designed* to be more speed conscious than say Pascal compilers and the straightforward nature of the C commands means that C often compiles more efficiently into native machine code than other languages do.

The speed benefit of programming in C enables highly complex programs to be developed in, what is ostensibly, a high level language. It virtually banishes the need to use machine code for all but the most demanding of tasks. This is not all a bed of roses however. The disadvantage of a language designed for speed is that no hand-holding checks are provided for programmers. The languages does not signal 'Division by Zero' and terminate when a calculation errs, instead it has a tendency to simply crash the machine. The onus of understanding the error is transferrred totally to the programmer. This, perhaps, is only right and proper. A programmer who relies on the system to tell him/her when a program fails to work correctly is not a programmer but a gambler. On the other hand, this 'washing hands of responsibility' can be more than a little trying for the inexperienced!

One of the attractive features of C is that it is a language which was conceived and implemented specifically for systems programming. This has always been a problem for standard high level languages in the past, which have gone out of their way to hide their local operating system from the programmer, thereby rendering themselves useless for all but the simplest of programs. It has the basic tools to perform any conceivable task, both at the high level, with constructs such as *if, while, for*. . . and also at the low level, including the direct manipulation of bits using logical operations and shift registers.

Standard libraries of functions provide comprehensive facilities for handling strings, including pattern matching, string formatting, text processing, character classification. Mathematical



libraries include all of the trigonometrical functions, including hyperbolic functions sinh, cosh and tanh and their inverses. Natural and base 10 logarithms are provided and a general exponent *x* to the power *y* is a standard feature of the C library. It is also a simple matter to add your own tools to the list.

C is sufficiently flexible to allow a programmer to take control of the way in which a program will be converted into machine code. One of the facilities includes the option of placing certain variables in the CPU's registers where they can operate considerably faster than they would placed in normal RAM. In addition, the ability to work directly with memory addresses, if desired, admits programming which would normally be regarded as the preserve of the assembly language programmer. These simple but powerful features of C bring it to the realm of serious programming.

Contrasts

C has both superficial and profound departures from the BASIC philosophy; some of these have already been mentioned. To someone who has used a compiler language before, these differences will come as no surprise.

Like Amiga BASIC, C does not use line numbers to distinguish between statements. Unlike Amiga BASIC, the format of a C program is almost completely free. A program can be set out as neatly as you like, with as many comments or REMarks as desired, because the compiler does away with all the spaces and comments when a program is compiled. This means that spaces and comments have literally no effect on the running of a program and take up no space.

Programs are written in any personally satisfactory format and take the form of files of pure text, using an ordinary screen editor, such as the AmigaDOS screen editor 'ed'. It is also possible to use an ordinary wordprocessor such as Scribble! to edit text provided that the special facilities like underlining and italics are not used. Unlike BASIC, programs written in C do not have to be contained in a single text file: they may be split up into any number of separate files; this is an added bonus which makes it easier to structure programs and to plan 'modules' and toolkits of standard code. The function of a compiler is to take these files and convert them into machine code templates, which are then filled in and joined together by a 'linker' as part of the process of compilation.

Any kind of programming unfortunately involves errors and C is no different in that respect. However the kind of errors incurred during BASIC and C programming are slightly different. This is a consequence of the way in which a program must be compiled *before* it can be executed.

All syntax errors must be eliminated, from a program before it can be run. This rids a programmer of the worry that spurious errors creeping into little used parts of a program, could cause the computer to down tools and emit a frustrating terminal objection.

Compilers are intelligent enough to pick up silly errors such as manifest division by zero or the use of a variable before its value has been defined. They also generate warnings; these are not fatal errors but remarks about the way a program is coded, which indicate possible errors of intention. For example: 'Possible confusion of = with =='. Although C does not provide all the same kinds of help that BASIC does, concerning run time errors, it does provide extra help in the form of warnings and thorough syntax checking.

Another area in which C differs substantially from BASIC is in the subject of variables. Unlike BASIC, compiler languages do not have naming conventions for variables (% implying integers and $ implying strings for example). Instead a system of 'types' is used. A variable is made to be of a certain type by actually declaring this fact at the start of the program in which it is to be used. For example:

float myvariable;

Which would make 'myvariable' into a floating point type, as opposed to an ingeger or a string. This is an added complication in programs because it means that the programmer must list all the variables in a program and say what types they are. But this is not just a trick designed to irritate. It actually supplies valuable information to the compiler about how much space it should allocate for a particular variable in the memory, and about what sort of machine code program it should create to do arithmatic with the variable and so on. It means that the compiler can create programs of 'stand-alone' code, totally divorced from the original source program.

The process of compiling a program and then executing it seems like a chore when one compares it to the BASIC approach of simply typing RUN. This is not least because inexperienced programmers can incur literally dozens of compilations errors from just a few lines of C. In trivial programs, which are just a few lines long, it is clearly difficult to justify C unless the expected run time of the program is very long and speed becomes important. The real advantages are to be seen in longer programs, or in programs which are written to be used by people: programs which should be foolproof and most importantly userproof.

C and the Amiga

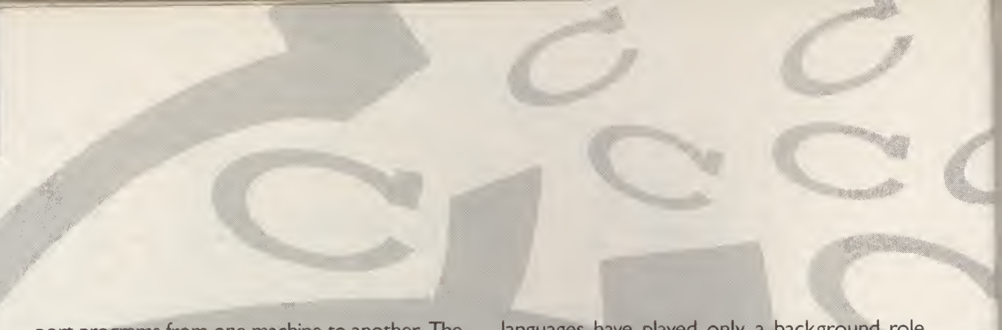
Why was C chosen as the language of the Amiga reference manuals? The design of the Amiga's operating system is surely a triumph of complex and thoughtful programming. The complexity of the interacting elements of AmigaDOS, the Exec and Intuition is far greater than anything which has been seen on a microcomputer hitherto. Yet despite this complexity, the essential core of programming is very simple, it revolves around the idea of a linked data structure.

A linked data structure is a pattern of data which is held together by connections like the branches of a tree. This enables levels of authority to be created and these levels of 'authority' simplify programming considerably. To understand what is meant by this, think of a window on the Amiga. The average window has a border, some depth gadgets for pushing the window behind or in front of others, perhaps a sizing gadget and a drag bar. All of those features have to be drawn for that particular window every time the window is moved or called up.

Intuition regards the basic window as being the 'object in charge' and all of its gadgets as being of 'lesser authority'. The drawing is made by creating a data structure of all the parts which make up the window. The example window, in this case, would begin with some window data and would then branch out into depth gadgets, sizing gadgets, drag bars and so on. Using this general pattern, Intuition reduces very large and awkward sets of data into ranks of simple things.

The Amiga C compiler supports all of the features which the Amiga has to offer (graphics and otherwise) and the C language incorporates tools which enable the construction of data structures. In particular, it has a type of variable called a 'struct' type or structure. This is actually a group of several variables, bundled up into a single package under a collective name. It enables programmers to create data structures like the one mentioned above. The Amiga uses these data structures to operate its windowing system Intuition as well as the Exec and AmigaDOS. Every group of lines on the screen, every gadget or requester which intuition uses is defined in terms of an elaborate data structure of variables. These data structures cannot be handled directly with BASIC, but are relatively simple to deal with in C using the struct types.

The Amiga operates a sophisticated system of messages and communications between multitasking programs. Here again is an area in which C simplifies the programming. In order to read messages and reply to them, programs must examine flags, or individual memory bits in the message packets and make decisions about them. In the past, programming at such a low 'operating system' level has been the realm of assembly language programming alone (for microcomputer programmers at least). The Amiga design has made it possible to formulate a consistent high level interface to the AmigaDOS, Exec, Intuition triad, using the data structure technology which C provides. The result is a considerable simplification of the programmer's task.



Without such a high level interface, the Amiga would probably only have a handful of programmers with the time and patience to understand its intricacies. As it stands, it is at least a straightforward, if not slightly fiddly task to program with windows, gadgets and menus.

The Future

C has developed a little since its inception. The de facto standard has been 'Kernighan and Ritchie C' as set out in the book by Brian Kernighan and Dennis Ritchie (1978) which outlines the C language. A number of improvements in the language have since been brought about by interested parties, such as the Lattice Corporation in the States, who produce the Amiga compiler.

A more recent development is the ANSI draft proposal to make C a standard language. The eventual success of the effort to standardise will be to set C alongside other marblised languages such as FORTRAN and Pascal and furnish it a more credible status among the academic and educational communities.

Standardisation means two things: the first is that a machine independent program, written in C on one computer, should compile and run unchanged on anther computer. This is obviously a great advantage for programmers who wish to port programs from one machine to another. The second, darker consequence is that new developments are often repressed by standardisation. Whether or not this is a bad thing depends upon the attitudes of the computer industry. There is a sense in which it is good: a ban on the modification of languages allows us to dispense with outdated languages straight away, in favour of newer and better designs.

The more pessimistic side of the coin is the familiar difficulty of getting old computer dogs to learn new tricks, having invested a lot of effort into developing the old ones. It is possible to be stuck with an old standard language, perhaps forever. This seems to be the current state of FORTRAN for example.

The last ten years has seen a dramatic development in the technology of computer hardware, spanning everything from the ZX-80 to the Cray-II. Speed, capacity and performance have been pushed up to new heights of excellence. The computer software industry has been somewhat slower in accommodating the changes. One of the reasons for this is perhaps that, while the component technology has been advancing, the basic architecture of computers has been the same: a single input device (the keyboard) a screen, printer, a block of memory and no more than one program at a time. New software methods and new languages have played only a background role. Multitasking was something which mainframes did and windows were just a gimmick. The principle programming languages of the microcomputer have been BASIC and machine code.

Software engineers are finally beginning to catch up with their hardware brothers however. The Amiga was a shock to many programmers: its complexity and manner of operation is radically different from anything which has preceded it. It has brought home the fact that software must devlelop in parallel. The Amiga developers were sensible to introduce C as the languaage of the software manuals. C is ideally suited to programming the Amiga.

Ten years ago most home computers didn't even have enough memory to run a compiler: today, computers like the Amiga offering in excess of 512k, make the luxury of programming a compiler language into a realistic prosposition. Speed is not the real issue any longer: however fast BASIC can be made to run, the fact cannot be changed that a more powerful language is required to program the new generation of Amiga machines — and for now, it would seem that that language is C.

Next month: How to write and compile a simple C program under AmigaDOS.

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VideoScape 3D

Aegis Development have added another member to their family of Amiga based packages. Clive Grace takes a look.

■ **In the last issue of *Your Amiga*** *(supplement to Your Commodore* — May 1988), I reviewed *Scuplt 3D*. This was a package that enabled a megabyte Amiga user to draw complex images on the screen and perform all sorts of complex graphical manipulations.

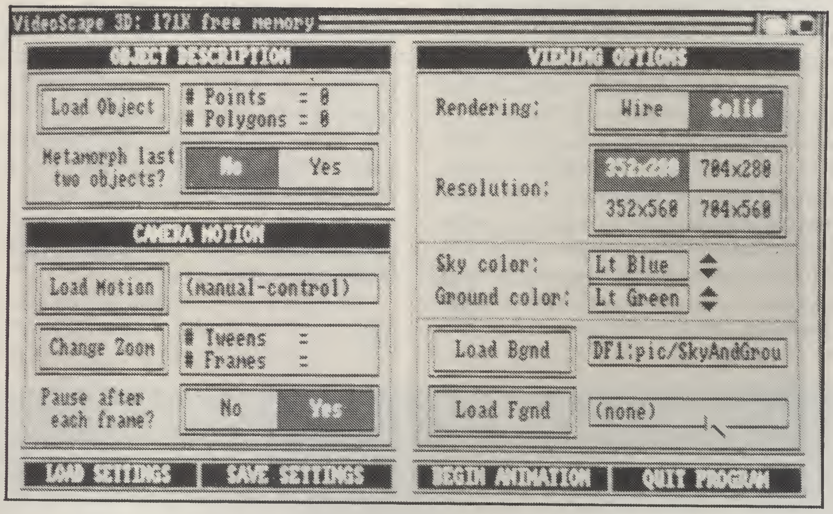
Aegis Development, have released a similar package that fits nicely into their family of "scape" packages. The product is called *VideoScape 3D* and the results achieved are no less than dramatic.

Using VideoScape

The package enables you to move solid 3D objects (in colour and virtually unlimited detail) through three dimensional volume in a convincing simulation. Both the light sources and your position relative to the image being displayed on the screen, are mobile, so you can zoom in and out of an object, and rotate yourself around an object in either straight lines or in arcs (including ellipsoid patterns).

It is not surprising that tasks animation teams are assisted by computer packages these days, costing many hundreds of thousands of pounds, simply to calculate perspective and angle. The problem is that these packages are tied down to mainframe (or large mini) computer systems owned by graphics studios, and then the cost of creating just a few short seconds of animation can run into thousands of pounds — something a professional animation studio often has to do without.

VideoScape 3D is, however a possible solution. With the Amiga's famed graphics capabilities and the processing power of the 68000 and the blitter, some very dramatic effects can be achieved just by using a simple 512K machine and a decent monitor. The software package allows individual paths of motion for animated objects to be controlled simultaneously; you can control the position of the camera's point of view making animation not just a two dimensional affair, but a three dimensional extravaganza!



Points = 0
Polygons = 0
Metamorph last two objects? No Yes
(manual-control)
Tweens =
Frames =
Pause after each frame? No Yes
Rendering: Wire Solid
Resolution: 352x280 704x280 352x560 704x560
Sky color: Lt Blue
Ground color: Lt Green
DF1:pic/SkyAndGrou
(none)

All this hyperbole is not unjustified; the most basic things that *VideoScape 3D* can do are far beyond anything I have seen in an animation package in this price range. *VideoScape's* ability to create objects of virtually unlimited complexity doesn't just end there. You can also set the objects colour and surface reflectivity from opaque to completely reflective (i.e. a mirror). Detail can be added to any object surface, and a light source can be positioned (so you can look at the effect of a piece of scenery backlit, overlit, or even under spotlights!) and opt for an automatically delineated earth and sky with a variable horizon.

On the animation front, you can define an object's motion and rotation, move the viewpoint of the camera, adjust the magnification level of the image (also known as zoom level) and choose from any of the Amiga's screen resolutions.

Possibly one of the most impressive features of this package is, however a transformation function; an image on the screen can be twisted into a completely different image.

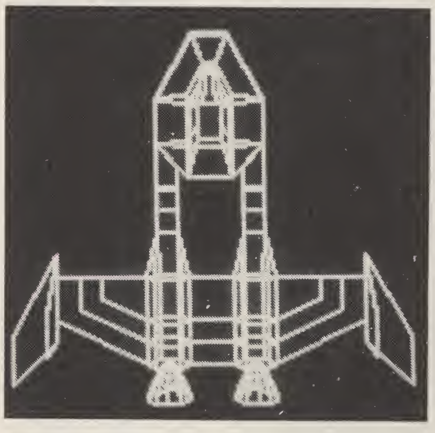
A full screen format is used called "overscan", which creates borderless output; meaning that your images are not hemmed in by the Amiga's display circuitry. The program's capacity means that it will be quite a while before using up all of the available supported memory of the Amiga, therefore making *Videoscape 3D* one of the more memory demanding packages for an unexpanded 512K machine.

VideoScape 3D generates the scenes that make up an animated sequence as a series of still frames. These can be displayed one after the other, or by using a little electronic trickery — lay them down onto decent quality videotape for seamless animations of virtually unlimited length.

Creating an Image

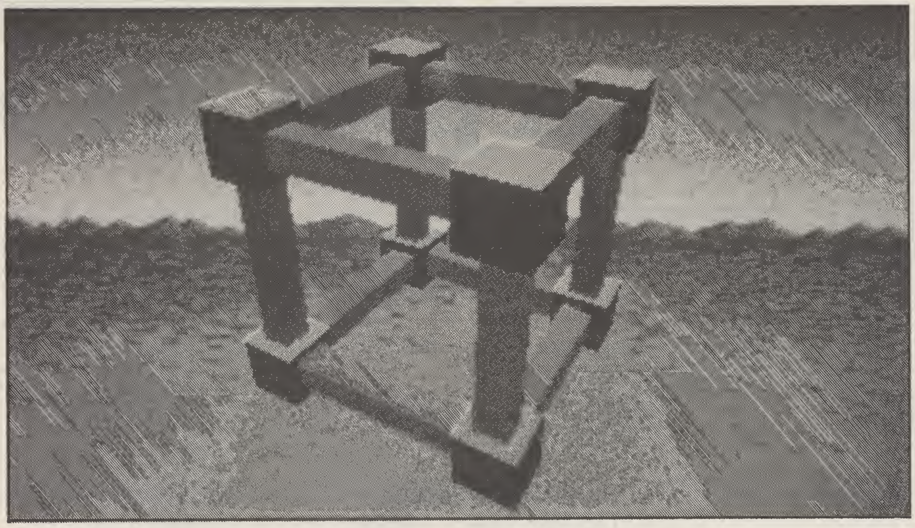
When drawing an image on the screen, you may be reminded of dot-to-dot books. Each dot has an identifying number and specified points are connected by lines to create a shape (loosely termed as a polygon), although this need not be a regular shape by any means.

VideoScape uses the idea of joining the dots to create solid objects by filling them in with colour. This is obviously, not just on a two-dimentional surface, for you can position these dots in relation to the volume of the polygon. To stretch the analogy, you could imagine that the dot-to-dot pattern is achieved in solid air and is stored in the Amiga as a special file called an "object geometry file". Complete arrays of points can also be stored in a file. These can be anywhere (within limits) in the Universe being set up by the user, and by specifying a starting and ending position, you describe a path for the object to follow. *VideoScape 3D* calculates the appearance of the object at every point between the start and end position and, although it is capable of handling far more complex calculations, a simpler linear "A to B" calculation is for many, all that is needed.



As an object can be moved, so can the point from the object's viewpoint. Like *Sculpt 3D*, this package is called the camera, and like the object motion file, this is described as the camera motion file. Both can work together to create huge arcing effects similar to those on Jim Blyn's famous "Voyager" film or from MIT's famous "Teapot" film. Alternatively you could have a look at scenes from "The Last Starfighter" in order to see what I mean.

A final window can be used to pull all of these together in order to make a full scene. The place where the preliminary work comes



together is in the Control Window which loads in the object geometry, the object motion and the camera motion files to create the scene. This window holds every element of an animated scene. It can be saved, loaded and modified at any time and is used to control the parameters of screen resolution, wire frame or solid (wire frame is useful for drafting purposes), light source illumination, the "lens" you are using on your camera (i.e., wide angle effect or a telephoto lens and anything inbetween these two effects), colour of earth and sky (if you have one), metamorphic control and automatic/manual control of the animation scene.

Viewing and Recording the Results

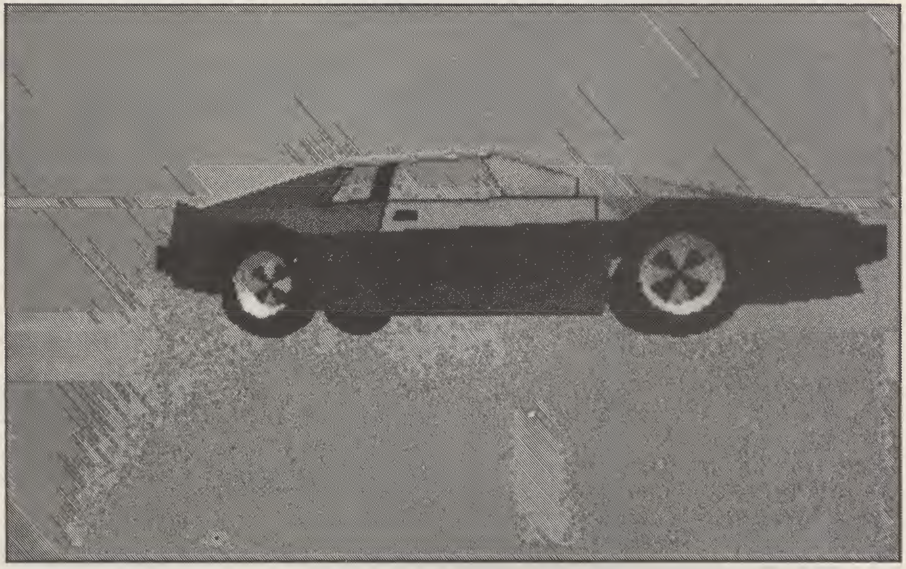
Once all these separate elements are pulled together, you will need to view the results and then record them onto tape, film or store than as a special IFF file variant (ANIM files). Both of these are accomplished by selecting the Begin Animation option. This facility calls up the Animation Window and begins to display the scene frame by frame. Animation can be automatically recorded, and this window is often the last window to be accessed before saving your sequence to tape. Each frame can be saved as an IFF format file.

Creating Images using VideoScape

Every shape needs to be feined as a series of co-ordinates, and to this end *VideoScape 3D* has a special suite of packages that are designed to create files for use in either *VideoScape* or from the *CLI* or *Workbench*. These programs are referred to as EGG (Easy Geometry Generator) and OCT (Object Composition Tool). EGG is used to create specific types of objects such as cubes and pyramids by simply asking for the co-ordinates to be typed into the console. Whereas OCT uses the same question/answer method to manipulate a single object or to join up two or more simple objects into a single large one.

As with *VideoScape 3D*, EGG and OCT can be used in the multitasking environment. However, I wouldn't recommend it unless you have quite a bit of memory to play with (more than one megabyte). EGG and OCT can be run at the same time as background tasks, and it's in this way that you can jump backwards and forwards between the many programs that make up the complete *VideoScape 3D* system.

Certain classes of mathematically regular objects can be made by EGG. These are used either as they are or combined using OCT to create very complex images. In any event EGG is a very useful utility. The EGG window displays a number of simple Geometry shapes such as a rectangular box, a faceted sphere or ellipsoid, a simple cone, a simple cylinder and so on. Fractal pathways can be generated using this window; a function that somewhat belies the packages simplicity. Fractals are not easy to work with, but using the EGG window, you can control simple fractal paths with ease



I will not bore you with the nuts and bolts of creating an image; suffice to say that all images are based on the standard X,Y,Z co-ordinates system where X and Y are the standard two dimensional vectors with the addition of Z being the vector specifying depth. Faceted spheres are stored in the logical format of building up three spheres (known as rings) with a top and bottom point. The rings have twelve points and the radius is set at the poles of the sphere. The points are all calculated prior to storing the file on disk (or RAM disk) and are then committed as a file name and separate icon.

For more complex images, the OCT is used to combine the images and images stored as EGG files and save another file as an OCT transformation file. In order to combine these basic shapes you can rotate, shrink, enlarge, and alter the shapes while retaining an accurate topographic image on disk. What this means is that you can alter the position of the image, and change all aspects of the shape relating to scale, but not shape. If you need to alter the shape of an image it's back to the EGG editor and save it as a file.

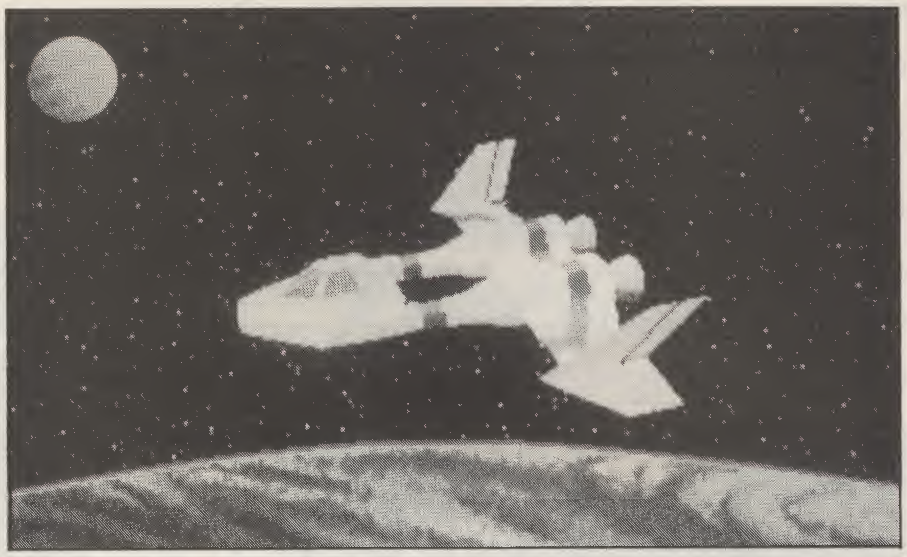
In addition to the X, Y and Z vectors with their scaling factors, the OCT editor requires H, P and B angles; these will bring the object into the correct orientation.

A third package has been included for use with the EGG and OCT files. Called *Designer 3D*, it is heavily based on the public domain package called ROT — although it has been heavily modified and expanded upon.

To use *Designer 3D*, simply click the Icon from the workbench or use the CLI to enter the system. Again, this package can be used with intuition, so if you have enough memory, you can access all of the facilities from the multi-tasking environment.

Designer 3D is divided into the Object Editor and the Action Editor. The Object Editor contains three views of the object you are designing and these relate to the isometric projections of top, side and front. They are initially displayed as wire frame representations of the shape you are editing, but with no hidden line removal.

The Action editor defines an action consisting of 24 steps (also known as frames). With each step, the object's position or orientation may be changed. So when frames are replayed quickly, the object performs the action or animation from different angles. Once satisfied with the object you have created, you can save it to disk for later use in *VideoScape 3D*. An action can be created out of 24 frames — this can be conveniently used to create one second of extemely realistic movement, or for less, you can create longer sections.



The action is also called a mini-movie and it is easy to see why! The quality of animation obtainable is nothing short of stunning — looking at the simple rotating "robot head" is merely the start of it. More complex sequences are possible that do not just alter X and Y positions, but you can also have objects speeding around the screen with just a little effort.

The speed of each mini-movie can be altered by using the slider bar on the bottom right hand side of the screen. This effectively controls the rate at which transitory positions between two points (tweenies) are used. Tweenies pop up when moving the camera around an image. This is called motion interpolation, and is basically a way of "interlacing" movements on the screen. For example, smooth interpolation is the standard option, but linear (straight line) interpolation is available. Providing that the first and last movements (tweens) are always linear, you wil find that the latter method offers better movements and more realistic animation, movement of limbs, etc.

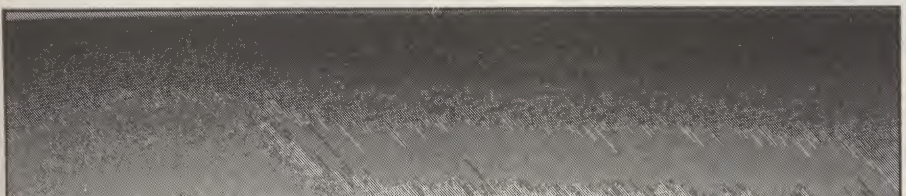
Getting it down in Memory

VideoScape 3D's record menu provides an alternative to recording animations with single frame VCRs and movie cameras. It can be used to store a highly compressed form of illustration and used to play back in real time using a special player program called PlayANIM). This simply takes a sequence of frames saved as ANIM files and links them together. You can videotape scenes while PlayANIM is playing so very smooth movies are made, and in my experience this is the most effective way of capturing your ideas on tape.

The only drawback I can see of using ANIM files are that the playback frame rate may vary depending on the complexity of a scene, and that the length of a scene stored in a single ANIM file is limited by the amount of disk space and memory you have.

You will need more than one megabyte of RAM for using the AMIN facility, although users of half megabyte machines can get away with very short mini-movies. The best sort of video recorders to use with this package are UMatic recorders, which offer a decent recording resolution. They support the Video on/off sequences sent by serial transmission, and do not suffer from the flicker inherent in most VHS recorders while using pause mode recording. Betamax is another option, but do not consider using the Sony C5 models as the pause facility is not accurate enough for professional results — the later Sony C7 model is excellent however.

Most home users will want to use VHS for their animation sequences which is a shame as VHS isn't very well suited to this sort of application. I suggest using the PlayANIM program to generate scenes of about 20 second long mini-movies. This will give the VHS recorder enough time to settle the heads down and get the tape running at a regular speed. Modern VHS recorders are a necessity — you will not get very good results from an old mechanical model, although a Saisho VCR works very well, especially in PlayANIM mode.



Conclusions

This is an amazing package to say the least, but working with *VideoScape 3D* isn't easy, especially to begin with, as the amount of work setting up shapes and objects seems a little hard. However, like any good assembly language programmer, you will have set up a great many primitives with which to make your life a lot easier.

After having used *VideoScape 3D* for about three months I can say that I'm now only just starting to create proper images that are worthy of recording. Certainly I have a mind to use the PlayANIM facility more than the single frame option, but the option is there nonetheless.

VideoScape 3D will, inevitably, be compared with *Sculpt 3D*. This is a shame as the two programs are quite different. *Sculpt 3D* is more interested in creating shading effects and lighting geometric shapes than *VideoScape 3D*. *VideoScape 3D* however, is more geared to creating images that can be easily (and quickly) moved about the screen. The option to record using a VCR is not just an afterthought, and the effects can, after a lot of hard work, be very rewarding.

Sculpt 3D is better at creating images that have better lighting, more depth and a generally more controllable user's interface. *VideoScape 3D* has sacrificed some of its ease of use and opted for the more powerful ability of being able to animate objects — *Sculpt 3D* is really more or less a static or simple animation package.

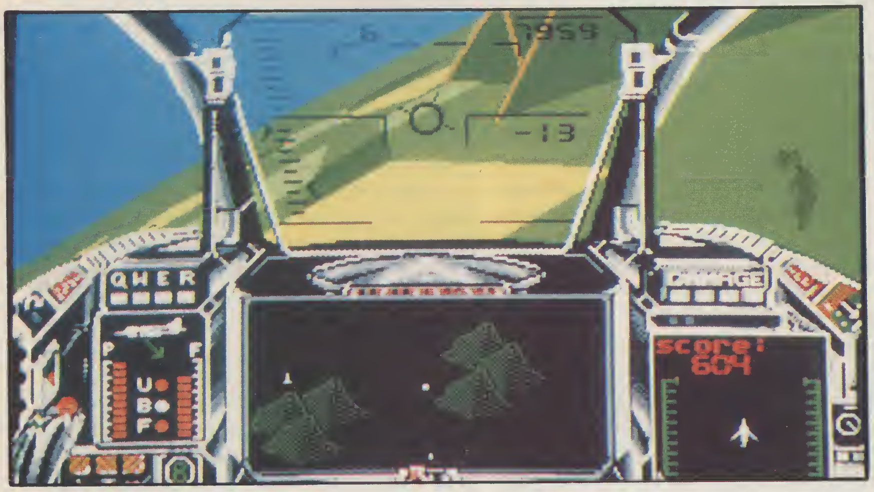
VideoScape 3D is very fast and uses all of the Amiga's screen modes (apart from HAM mode). You can incorporate files drawn with *Digi Paint* or *Deluxe Paint*, and use them as backgrounds, foregrounds and even for animated images.

Personally I preferred using *VideoScape 3D* to *Sculpt 3D* (and its animation package — extra cost), but using the software is hard work, whereas with *Sculpt 3D* a lot of the work is done for you. *VideoScape 3D* drops you right into the middle of things with very little to support the user. This results in the package being harder to use, but more flexible in the long run.

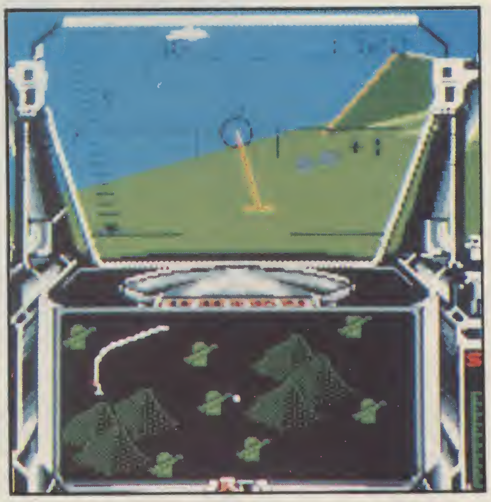
Top Gun

Gordon Hamlett tries his hand at a vertical takeoff in a Harrier courtsy of Mirrorsoft

Put yourself in the cockpit of one of this country's most successful warplanes — the vertical take off and landing Harrier. Your ultimate objective in this flight simulator is to destroy the enemy's headquarters (how original!) though you must also take steps to defend your own base. During the game you have the opportunity to attack both land and air targets using bombs, cannon and heat seeking missiles. You have flares and chaff (strips of aluminium foil designed to confuse the enemy's radar) to help defend yourself against incoming missiles as well as being able to use such tactics as 'viffing' (vectoring in forward flight) as a way of turning defence into attack.



Viffing is used when you have an enemy aircraft on your tail and basically involves using your engines in vertical take off mode. This radically slows your plane down causing your opponent to overshoot and leaving you on his tail. This was a tactic used to great effect in the Falklands campaign. The instruction booklet gives details of this and other aerial manoeuvres although the detail is fairly limited and you may wish to take advantage of one of the special offers on two books that are included with the package.



Easy To Fly

Instrumentation is presented in the form of a head up display. This means that instead of having to look around for the right dial, all the main information that you need constantly is projected onto the canopy of your cockpit. The displays include vertical and airspeed indicators, height, pitch, a compass and various sights depending on which weapons you are using. Other instruments include undercarriage, flaps, brakes, thrust indicators and various radar displays. These are an air attack radar that shows the position of any aircraft or missiles getting dangerously close to you and something called FOFTRAC. This is a friend or foe tracking radar that combines a map with a target display.

Before you reach the enemy's headquarters, you first need to destroy any tanks threatening your own base. You should then find a suitable area to set up a new operational base. Remember, Harriers don't need conventional airstrips. This is an ever continuing process as your new base is found and destroyed.

The enemy aircraft are based on the Russian Mig 26. This aircraft can out perform your Harrier i.e. it has supersonic capability and you don't (except when diving). This means that it is important that you meet him on your terms.

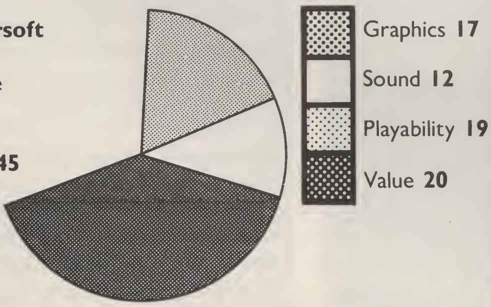
There are three different skill levels for you to master and there are practice modes for both general flying and combat situations.

The packaging claims that this is a full flight and combat simulator which is something of a misnomer when compared to some of the current American simulations but lack of complexity for complexity's sake might be a decide advantage in some peoples' books. The manual, although brief by current standards gives details of all the main procedures in flying — short, verticaland conventional take offs and landings, hovering etc. There are also diagrams on Immelmann turns and Split 'S' manoeuvres, all of which are designed to keep you alive longer.

The game strikes just the right balance between complexity and playability and has got to be one of the best flight/combat simulators currently available on the Amiga.

Strike Force Harrier

Publisher:**Mirrorsoft**
Athene House
66-73 Shoe Lane
London
EC4 4AB
TEL: **01 377 4645**



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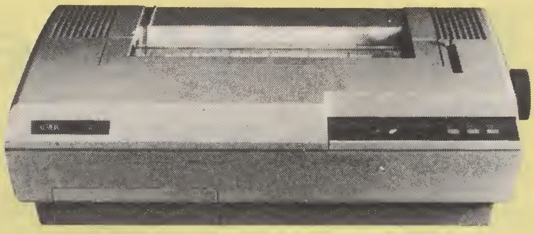

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In The Public Domain

Commercial software on the Amiga can hardly be described as cheap. It is therefore not surprising that there is a large amount of public domain software available. We start a regular column that will tell you what's available.

■ **When the Amiga was first** launched there was of course very little software available for it. The same generally holds true for any truly *new* computer that isn't compatible with something that already exists in the market place.

Owners of the Amiga were therefore in a bit of a dilemma. They could either sit back and wait for the ponderously slow software houses to realise what a superb machine the Amiga really was and launch some software. Or, they could produce their own software.

It was because of these frustrations that the first public domain software appeared for the Amiga early in 1985. The most famous of which was put together by Fred Fish. Yes he really does exist!

The Early Days

The first Public Domain (PD) disks were ported by *Usenet* and shown at a meeting of *The First Amiga User Group* in San Francisco. The response to these early disks was excellent and PD on the Amiga was born.

The Fish library of public domain disks is still being constantly updated and there are currently well over 130 disks available in this collection of software alone.

Other well known PD libraries are Amicus and the 'Hot/Mix Collection' from the *F.A.U.G.*

What Software

The types of program you find in these libraries include working demos of commercial software, simple and complex games, utilities, extras for commercial software, demos from commercial companies and users, communication programs, in fact the list is endless.

Some of the programs that are to be found on PD disks are not PD, but rather are classed as *shareware*.

With PD software the programs author has placed this work in the public domain allowing any computer owner to have a copy of that program and use it. PD software may be passed freely from one person to another.

Shareware is slightly different. With this type of software the programs author has placed his program in the public domain so that other computer users can see it and use it. Should they find the software useful the author asks that a small amount of money be sent to him/her to pay for the program. This is usually only a few dollars. Unfortunately, since most of us are a little reluctant to part with our hard-earned cash, *shareware* is becoming less frequent.

Exploring the world of PD is helped by the existence of the directory listings such as the *Fish Directory Disk*. This details the contents of Fish Disks 1 through 118. *Amicus* and the *F.A.U.G* frequently include catalogues on their regular releases.

The standard of Amiga PD material is generally very high. This is as a result of the 'Librarians', tight editing. Many more programs are rejected than are accepted for inclusion on a disk.

Amiga owners are fortunate in that several sources exist for the distribution of Public Domain disks. These are inexpensive and prices are usually given for duplication onto your own disks as well as supply of a new disk with the programs already on.

Nearly all Amiga PD disks are over 90% full of material.

Figuring Out PD

Ordering a PD disk can cause a great deal of frustration being delivered along with the disk, especially for people who are trying PD for the first time, though the situation is improving.

Though many PD programs run by simply clicking an icon, there are still many useful and interesting utilities, games and demos that have to be run from the CLI. This especially applies to the early Fish disks.

Few PD disks contain much in the way of documentation, and it is possible to spend days getting something to run, let alone find out how to use it.

Here are some hints on how to run such software.

●First, and especially if you have a single drive, find out the name of the disk so you can use the name rather than drive number.

This is mandatory on one-drive systems that run programs from the CLI. When you put a disk in the drive, its disk icon appears on the Workbench screen. The title below the icon is its name.

●Open the disk's main window (by double clicking on the disk) to see if you were lucky and have obtained a disk whose programs run from icons. Yes? Then double-click them to see what happens. If not then you'll have to enter CLI. It is here you can enter AmigaDOS commands that may or may not make the PD disk program work.

●If you don't know how to enter CLI refer to one of the many discussions on CLI that have been published. An introductory article on using CLI is published in this issue of *Your Amiga*.

●Let's say you have a disk named PD:. If you have two drives, put Workbench in one, PD: in the other and enter the following:

LIST PD: (and press Return)

If you have one drive, put Workbench in it, type

```
LIST PD: (and press Return)
```

and then respond to the requestor box by putting PD: in the drive.

AmigaDOS will respond with a list of files and directories on the disk. If you have a printer you can get a listing of these on paper with the command:

```
LIST ) PRT: PD:
```

If you can find any README files or files ending with the characters .doc, .txt or anything else suggestive of a text file, try to read them by typing:

```
TYPE PD:filename
```

where *filename* stands for the name of file.

Holding down the right mouse button stops the scroll until the button is released.

You can also see ASCII files by typing:

```
ED PD:filename (and press Return)
```

To use ED you need a bit of knowledge about cursor movements. Use the down arrow key to move down a text file. Exit ED by pressing the ESC key, the letter Q and Return. You may also scroll up and down entire screens with CTRL U and CTRL D.

●LISTed files may show the characters "dir" as part of their identification. This means programs or text files, usually associated with a single topic, are grouped within a directory (equivalent to a drawer on the Workbench screen). To list contents of a directory named *tom* type:

```
LIST PD:tom (and press return)
```

Within this directory you may find more documentation files (READMEs and the like) and you may find the actual program you're seeking. It is even possible to find directories within directories.

To read a file named *help* within the *tom* directory on a disk named *PD:*, you should enter:

```
TYPE PD:tom/help (and press Return)
```

When you locate the file that you require you may find it runs just by typing:

```
RUN PD:filename (and pressing Return)
```

It may run by simply typing its name:

```
PD:filename
```

If the program is buried within a series of drawers, it can be a frustrating experience to get the syntax to start the program just right. The key is to put a colon after the disk name and separate each name of the pathway with a slash.

Example: You've found a program called "*the last program you'll ever need*" within a directory called "*importantprograms*" which is itself part of a disk labelled "DE PROFUNDIS:".

To start the program you would have to type:

run de profundis:importantprograms/the last program you'll ever need. It can get very confusing.

The lines between the words just serve to integrate the names into a single, unbroken filename the Amiga recognizes. If someone has named a program with two or more sets of characters, as in READ ME, you must enclose the entire name within quotes.For example:

```
LIST "PD:READ ME"
```

●After trying the above experiment. The field of PD is marked by different styles,lack of documentation, and presumption. It is presumed you know what you are doing even if you haven't got the slightest idea!

The Badge Killer Demo Contest

One type of program that Amiga PD disks are renowned for is the 'Demo'. Using software such as *De-Luxe Video, The Director, Sculpt 3D, Animator* and others. Amiga owners can, with patience, achieve stunning results.

So popular has the demo become that it is widely believed that the demo has contributed more to sales of the Amiga than any other factor.

Included on recent Fish disks are many programs entered into the *Badge Killer Demo Contest*. This was held last October at a meeting of the *Bay Area Amiga Developers Group* (BADGE) at Stanford University.

30 demos were entered into a contest, watched by a capacity crowd. Each member of the audience was given a ballot to record their votes for each demo. A maximum of 100 points could be achieved. The breakdown was as follows:

Technical — 30 pts;
Use of Graphics — 15 pts;
Use of Sound — 15 pts;
Nift — 30pts;
Amiga Specifics — 10 pts.

The *Nift* category was for the immediate impression the demo made and *Amiga Specifics* took into account how the demo made use of the unique features of the Amiga — could the results obtained be achieved on any other computer?

Dangers Video

The overall winner of the contest was *RGB* by Joel Hagen. Requiring 1M of memory, this film highlights the dangers of excessive RGB radiation. It was also voted the funniest entry.

Second was *Kahnankas* — the executive toy with balls — by Ken Offer. This 512k demo also won best Graphics award.

Third place went to *Rot Amiga*, also by Ken Offer. This animation of the word Amiga rotating through a large cherry, takes up an entire disk and requires over 1Meg to run.

Fourth was *Killer* by Robert Wilt featuring the music of the Beatles.

Another demo also worthy of note is *Nemesis* by Mark Riley. This also achieved best sound award.

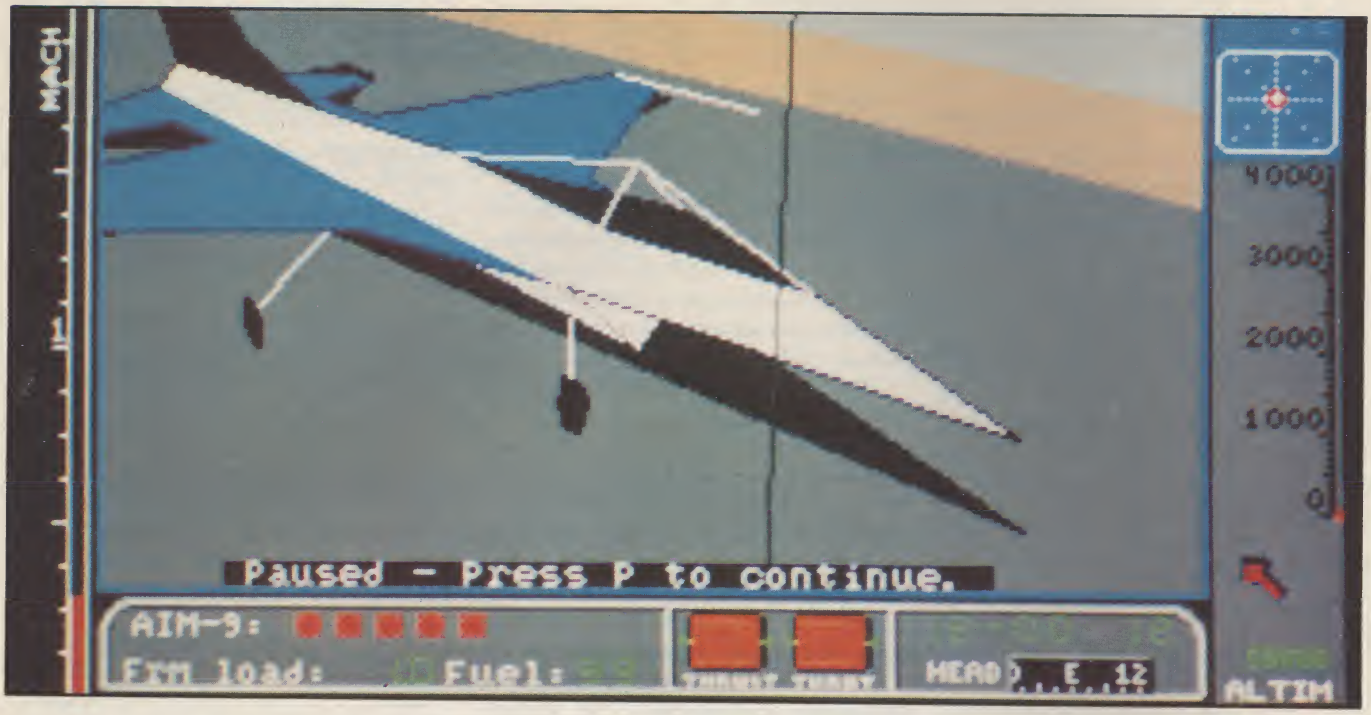
Of Course There's More

In this article we have of course only glossed over PD software. In future issues of *Your Amiga* we will be taking a specific look at certain types of software, for example sound and disk utilities, telling you what's available and where you can get the programs from.

Thanks must go to *George Woods Associates* for their help in producing this article. Without their co-operation production of this PD series would be impossible.

Should you have any questions or comments about PD software please do drop a line to *In The Public Domain* at the *Your Amiga* offices and we will try to put forward your views and answer your questions in this page. Sorry, but queries cannot be answered on an individual basis.

Sublogic Jet



Paused - Press P to continue.

A new flight simulator from the masters of this genre — but with a difference says Mary Branscombe

I must admit I am never one for playing flight simulators, they are normally too difficult to play, sporting awful graphics, bad sound effects and stupid controls. Another reason why I never play flight simulators is that they are so boring — you fly for about half an hour, do the odd loop the loop fly under a bridge and that's it!

But hold on! Perhaps I should say 'I never played flight simulators until coming across *Sublogic's Jet Simulator*'. If you were ever lucky enough to see the demo of Radar Raiders (sadly never released) then you would have been impressed at *Sublogics* mastery of the flight simulator, their ability to make it a bit different and their understanding of just what makes a good game.

Jet is a simulation of both the F-16 Fighting Falcon and the F-18 Hornet Jet fighters — both of these have tremendous power and agility and are, so *Sublogic* say, easy to fly.

Unlike some other flight simulators *Sublogic Jet* isn't just a single game, it is many different games. Each testing one or more aspects of flying and dog-fighting against the computer. Interestingly the game also enables you to pit your wits against another player! By hooking up two Amigas you can blast the merry hell out of each other for hours on end. One great plus is that if you have the earlier *Sublogic Flight Simulator II* package, then you can load in scenery files from that disk and have a completely different game.

What To Fly

The first thing you will be greeted with when booting up the disk is the menu screen; there are ten options, one giving you a demonstration of the F-18 bombing ground targets.

To call *Jet* a mere flight simulator is a bit of an over-simplifcation though. Most flight simulators place you in the cockpit of an aircraft and leave you to the controls. With *Jet*, you can not only view the game from the cockpit, but you can look at your progress from many different geographical points. For example, the air traffic control tower. You can view your progress in a variety of different orientations (including a sweeping arc around the plane as it is flying), and, if you have to bail out, then you can parachute your way to relative safety whilst still looking on! Oo-er...It's a bit like having an out of body experience!

Now comes the hardware. You can select all sorts of different armaments ranging from the AIM-7 missile through to the AIM-9, the AGM 65's and the MK-82 bomb — a quick look up in Jane's catalogue and Yep, there all there! So if you like messing up a few acres of land go for the MK-82's. If, however you like taking on air to air targets slap in a few AIM's and get out there.

With the AIM missiles you can do some serious damage, especially if you are adept enough at taking out a few oil containers (loosely termed as "ground targets"). Why is it that most U.S. flight simulators take place in desert situations and always invlove bombing oil containers?.

I mustn't leave out the other options though, such as the sea target tests (bombing ships) and the sea based free flight which is essentially just an acrobatics and landing practice game — the scenery is, however, beautiful — it just goes to show that solid 3D representation can be done, though with *Sublogic's* standards, *Jet* will be hard to beat.

Changing Backdrops

As already stated it is possible to load in different scenery files depicting different American states including San Fransisco, Miami and Dallas. Some more scenes are being planned and the Flight simulator II scenery files can also be loaded in, so if you liked the gameplay of the LearJet or the Cessina planes, try out the scenery with a missile bristling F-18, you'll love it.

WELCOME!

Win an Amiga!

*Your Amiga is a winner,
you can be too!
Just send in your Reader
Survey by the 15th June
1988 to enter the prize
draw to win an Amiga
500 computer*

1. (a) Which of these items, if any, do you personally own?
(b) Which items, if any, are you likely to buy new in the next 12 months?

	(a) Personally own	(b) Will buy new — next 12 months
Amiga 500	☐	☐
Amiga 2000	☐	☐
Amiga 1000	☐	☐
Colour monitor	☐	☐
Memory expansion	☐	☐
Second floppy drive	☐	☐
Modem	☐	☐
Hard disk	☐	☐
Dot matrix printer	☐	☐
Colour printer	☐	☐
Laser printer	☐	☐
Plotter	☐	☐
MIDI interface	☐	☐
Sound sampler	☐	☐
Video digitiser	☐	☐
Genlock	☐	☐
PC Emulator	☐	☐
PC Bridgeboard	☐	☐
68020 add-on	☐	☐
C language	☐	☐
68000 Assembler	☐	☐

2. Below is a list of the main types of content you will find in Your Amiga. For each item please tick whether it is very important to you, quite important, not very important or not at all important.

	Very important	Quite important	Not very important	Not at all important
News/previews	☐	☐	☐	☐
News from USA	☐	☐	☐	☐
Games reviews	☐	☐	☐	☐
Software reviews	☐	☐	☐	☐
Hardware reviews	☐	☐	☐	☐
Pullout technical information	☐	☐	☐	☐
Hints and Tips	☐	☐	☐	☐
Competitions	☐	☐	☐	☐
Readers' Letters	☐	☐	☐	☐
Disk with issue's software on it	☐	☐	☐	☐
Music features	☐	☐	☐	☐
Graphics features	☐	☐	☐	☐
Desktop publishing features	☐	☐	☐	☐
Desktop video features	☐	☐	☐	☐

3. Here are some things which other readers have told us about Your Amiga. How much do you personally agree or disagree with each of them?

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
Your Amiga offers good value for money	☐	☐	☐	☐	☐
Your Amiga concentrates too heavily on the technical aspects	☐	☐	☐	☐	☐
The software and hardware reviews are really useful	☐	☐	☐	☐	☐
The magazine only really caters for the games player	☐	☐	☐	☐	☐
I really like the colour photographs in Your Amiga	☐	☐	☐	☐	☐

4. Overall how much would you say you like Your Amiga magazine?

I like it very much ☐
I quite like it ☐
I neither like or dislike it ☐
I don't like it very much ☐
I don't like it at all ☐

5. How likely are you to buy the next issue of Your Amiga?

Definitely ☐
Very likely ☐
Quite likely ☐
Not very likely ☐
Not at all likely ☐

6. Your Amiga comes out every two months. How often do you think you will buy it?

Every issue ☐
Every other issue ☐
Less often ☐
Rarely/never ☐

7. (a) Which, if any, of the following Amiga/general magazines do you ever read or look at?
(b) Which, if any, do your personally buy regularly?

	Ever read/ look at	Regularly buy
Amiga User incorporating Commodore Business User	☐	☐
Amiga World	☐	☐
Popular Computing Weekly	☐	☐
Your Computer	☐	☐
Your Commodore	☐	☐

8. Would you buy Your Amiga as well as or instead of the other Amiga magazine you already buy?

As well as ☐
Instead of ☐
I don't buy any other Amiga magazines ☐

9. If you read any of the following magazines, how do you feel that they compare with the first issue of Your Amiga:

	Not as good Your Amiga	As good as Your Amiga	Better than Your Amiga
Amiga User incorporating Commodore Business User	☐	☐	☐
Amiga World	☐	☐	☐
Your Commodore	☐	☐	☐

PERSONAL DETAILS

10. (a) Sex

Male ☐
Female ☐

(b) Age

Under 16 ☐
16-24 ☐
25-34 ☐
35-44 ☐
45-54 ☐
55-64 ☐
65 and over ☐

11. (a) If working, what is your occupation?
(PLEASE WRITE IN) ....

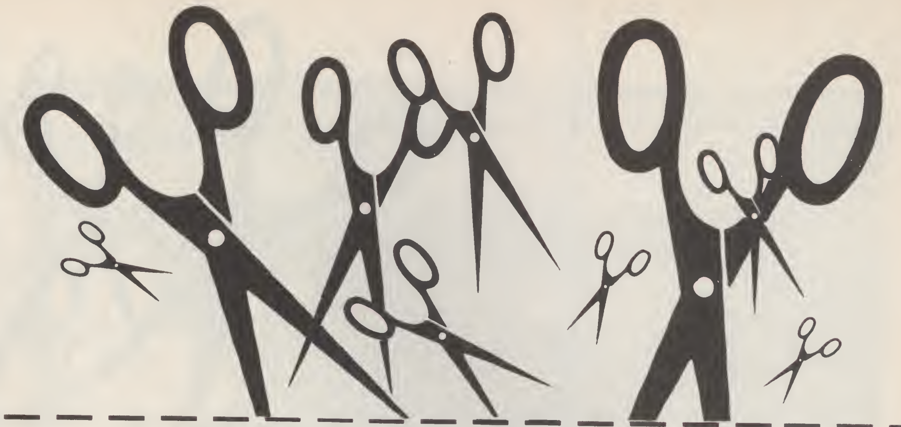
(b) Please tick the box which represents the annual total of your gross income:

Under £6,500 ☐
From £6,501 to £8,000 ☐
From £8,001 to £10,000 ☐
From £10,000 to £12,500 ☐
From £12,501 to £15,000 ☐
From £15,001 to £19,000 ☐
From 19,001 to £25,000 ☐
Over £25,000 ☐

NAME and ADDRESS for competition ONLY. We will not use this information for any purpose other than to guage your opinion of Your Amiga. All replies will be treated in the strictest confidence.

Name ....
Address ....
.... Postcode ....

YOUR HELP IS MUCH APPRECIATED



CLI Commands

The CLI command listing relates to the latest version of the CLI (version 1.2) and the commands are supplied on the standard Workbench disks for the Amiga 500 and 2000 series. You'll find them in the C directory.

1.ADDBUFFERS

AmigaDOS normally sets up small areas of disk workspace known as caches to help reduce the disk activity, there are five buffers as standard (each of 512 bytes)

The Command sequence ADDBUFFERS DF0: 20 will add 20 more buffers to the cache taking 10K of memory.

Syntax:
ADDBUFFERS[DRIVE]<Drive>[BUFFERS]<numbers>

2.ASSIGN

This command automatically assigns a device (such as a disk) to a directory, it can also be used to examine current device names.

Syntax: ASSIGN [[<name>]<dir>][LIST]

3.BREAK

This command sets the specified attention flags in the process. C sets up the flag Ctrl C, D sets it up as Ctrl D and so on...

Syntax: BREAK<task>[ALL][C][D][E][F]

4.CD

This command switches you into a new directory - CD also changes the drive if the directory is not found on the current drive.

Syntax: CD[<DIR>]

5.COPY

This command simply copies one file or directory from one device to another.

Syntax:
COPY[[FROM]<name>][TO<name>][ALL][QUIET]

6.DATE

With no input parameter, this command displays the date currently set in the system clock this includes the day of the week and is required for

date-stamping files.

Syntax: DATE[<date>][<time>][TO/VER <name>]

7.DELETE

Delete attempts to remove each file you specify. If it cannot delete a file, the screen displays a message and AmigaDOS will attempt to delete the next file in sequence (if there is any).

Syntax: DELETE
<name>[<name>*][ALL][Q/QUIET]

8.DIR

Displays files in a directory in sorted order. DIR also lists files in a subdirectory.

Syntax: DIR[<name>][OPT A/I/AI]

9.DISKCHANGE

This command informs AmigaDOS that a new disk has been inserted in a drive (both internal and external)

Syntax: DISKCHANGE [DEV]<drive>

Syntax: LAB <string>

24.LIST

Examines and lists information relating to a specific file or directory.

Syntax: LIST[[DIR]<dir>][P/PAT <pat>][KEYS][DATES][NODATES][TO]<name>][S <str>] [SINCE <date>][UPTO <date>][QUICK]

25.MAKEDIR

This creates a directory ready for use - an Icon is also created for use in the workbench.

Syntax: MAKEDIR <dir>

26.MOUNT

This makes available a new or non-standard device - standard devices are automatically mounted.

Syntax: MOUNT <dev name>

27.NEWCLI

Creates a new window associated with a CLI process.

Syntax: NEWCLI [<window>]

28.PATH

This is a powerful function whereby the search path used by the CLI is changed, ie searching another drive before the currently selected drive.

Syntax: PATH[<f1> <f2> <f3> [ADD]][RESET] [SHOW]

29.PROMPT

This simply changes the prompts in the CLI!

Syntax: PROMPT <prompt>

30.PROTECT

This sets a file's protection status.

Syntax: PROTECT [FILE] <filename> [FLAGS <status>]

31.QUIT

The command exits from a command sequence with a given error code. The code can be trapped using the IF statement for conditional exits and the like.

Syntax: QUIT[<return code>]

32.RELABEL

This changes the volume name of a disk to the <name> you have specified - volume names are initially set when you format a disk.

Syntax: RELABEL [DRIVE] <drive> [NAME] <name>

33.RENAME

Is different to RELABEL as this renames the FROM file name with the specified TO file name. FROM and TO must be files on the same disk.
Syntax: RENAME [FROM] <name> [TO/AS] <name>

34.RUN

The command executes a command as a background task and not as a CLI process.

Syntax: RUN <command> + <command>...

35.SEARCH

This will search for a specified string throughout a directory and any specified subdirectories - it will display the line on which the string was found, and the name of the file.

Syntax: SEARCH[FROM]<name>/<pat> [SEARCH] <string> [ALL]

36.SETDATE

To alter the date stamp on a file - this is usually set up by the clock (if fitted).

Syntax: SETDATE <filename> <date>[<time>]

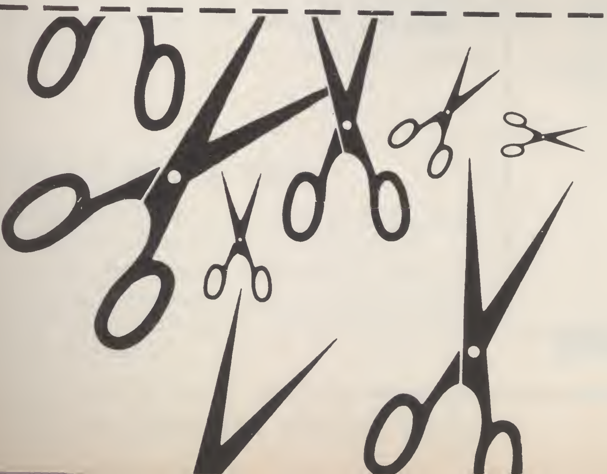
37.SKIP

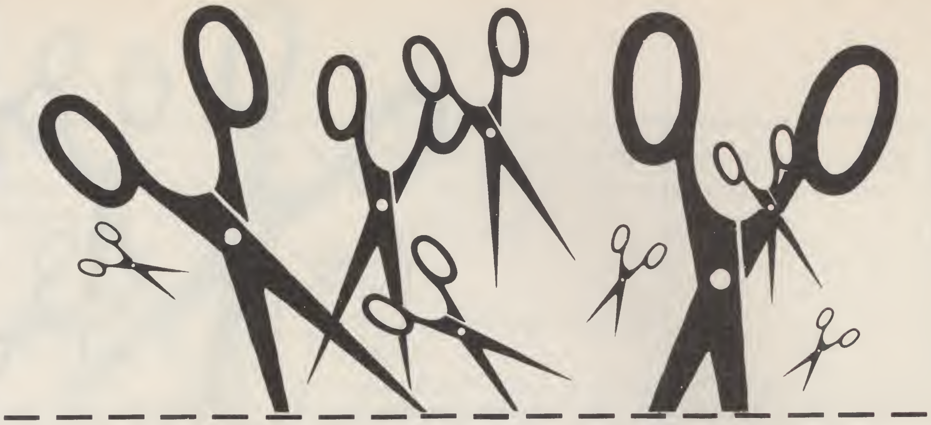
Performs a jump in a command sequence within an EXECUTE command file.

Syntax: SKIP <label>

38.SORT

This sets up a very simple SORT routine in a command sequence so that they are





displayed in a logical format although it doesn't sort files that are too large for memory.

Syntax: SORT[FROM] <name> [[TO] <name>] [COLSTART <n>]

39.STACK

This returns the stack size for the commands. You can also use this to set the stack - this is set up at around 4000 bytes which is normally more than adequate.

Syntax: STACK [<n>]

40.STATUS

This displays information about the currently existing CLI processes, it lists them and also returns the program running in each.

Syntax:
STATUS[<process>][Full][TCB][SEGS][CLI/ALL]

41.TYPE

To type a text file or to type a file out as a hexadecimal dump - ideal for fast examination of a file if you are not sure whether it is data or text.

Syntax: TYPE [FROM] <name> [[TO] <name>/[OPT N/H]

42.WAIT

WAIT can be used in command sequences or after RUN to wait for a certain period of time. Set it up as a background task, and you can have it WAIT until a certain time of day, the WAIT time is normally one second.

Syntax: WAIT <n> [SEC/SECs] [MIN/MINs][UNTIL <time>]

43.WHY

One of the most powerful interactive commands in the CLI. Should a process fail, simply typing in WHY will return a more descriptive and more human account of the reason for failure.

Syntax: WHY

10.DISKDOCTOR

Quite possibly one of the most powerful facilities in the whole list, this attempts to fix broken disks that have been corrupted by either removing whilst the disk light is on, or any other form of software corruption.

Syntax: DISKDOCTOR[DRIVE]<drive>

11.ECHO

This command sends a string to the currently specified output device - it is the equivalent of PRINT in BASIC.

Syntax: ECHO<string>

12.ED

This is a simple screen editor which is an alternative to the line editor EDIT - ideal for setting up EXECUTE files.

The last specifier (n) sets up the file size by the number of bytes in the machine.

Syntax: ED[FROM]<name>[SIZE <n>]

13.EDIT

Is the line editor and does not require file sizes to be set up.

Syntax:
EDIT[FROM]<name>[[TO]<name>][WITH]<name>][VER<name>][OPT<option>]

14.ENDCLI

This closes the window set up in CLI. If there are two cr more windows opened, then the ENDCLI command will bring the user back to the last one selected.

Syntax: ENDCLI

15.EXECUTE

This command executes a file containing AmigaDOS commands, which simply sends the files as a stream to the CLI.

Syntax: EXECUTE <file> [arg>*]

16.FAILAT

This instructs a command sequence to fail if a program returns an error code greater or equal to this number. Leaving out this number will return the error number.

Syntax: FAILAT <n>

17.FAULT

To display the messages corresponding to the fault codes supplied by the user.

Syntax: FAULT [<n>*]

18.FILENOTE

This command attaches a simple comment or a note to a file.

Syntax: FILENOTE [File]<file> COMMENT <text>

19.IF

This allows conditional statements to be set up - much like a programming language so you can set up sequences whereby files are deleted IF they hold a backup suffix etc.

Syntax:
IF[NOT][WARN][ERROR][FAIL]<str>EQ <str>][EXISTS <name>]

20.INFO

This merely returns system information regarding the current filing system status.

Syntax: INFO

21.INSTALL

This is a useful command that makes a formatted disk bootable. It also cures many workbench disks of virus infections.

Syntax: INSTALL[DRIVE] <drive>

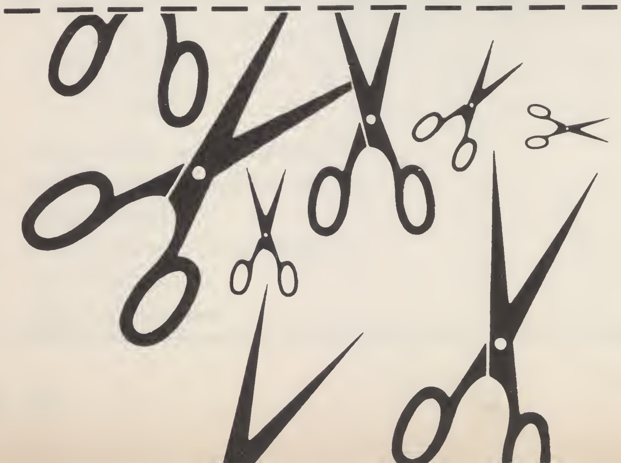
22.JOIN

This links up to 15 files to create a new file - very useful if you have a word processor file that has been saved in modules and you wish to load it into a single file WP package.

Syntax: JOIN <name> <name> [<name>*]AS <name>

23.LAB

This implements labels in command sequence (execute) files.



Fast Action

Shooting down Commies in their MIG-21's is quite demanding, this leads me to ask the question "must the game be so fast?" I mean, this is quite possibly the most demanding of all the menu options where you are put against two (or more) MIG fighters, (the customary jet used by the enemy) they were used during Suez, they were seen in use over Afganistan and they are also used in the Chinese Armed forces. Okay so they have been superceded in some ways, but they still remain the classic figher jet plane, and the way they fly and fight is, as far as I can see, quite accurate.

Playing with a mouse is a novel feeling, but I personally found it easier to get on with the game playing it with a joystick. The ailerons react faster on a F16 than on the F18 (this is why the F16 is termed a "ballistic" fighter) therefore it can react much quicker to the demands of pulling back on the stick for fast altitude climb (if you can stomach it in real life). Of course flying computerised systems can quite easily feel like the real thing because so many modern jets (the F16 and F18 included) are flown by wire — i.e. the controls are sent by computer to the mechanism for moving ailerons, altering thrust and so on...

Chuck Branscombe

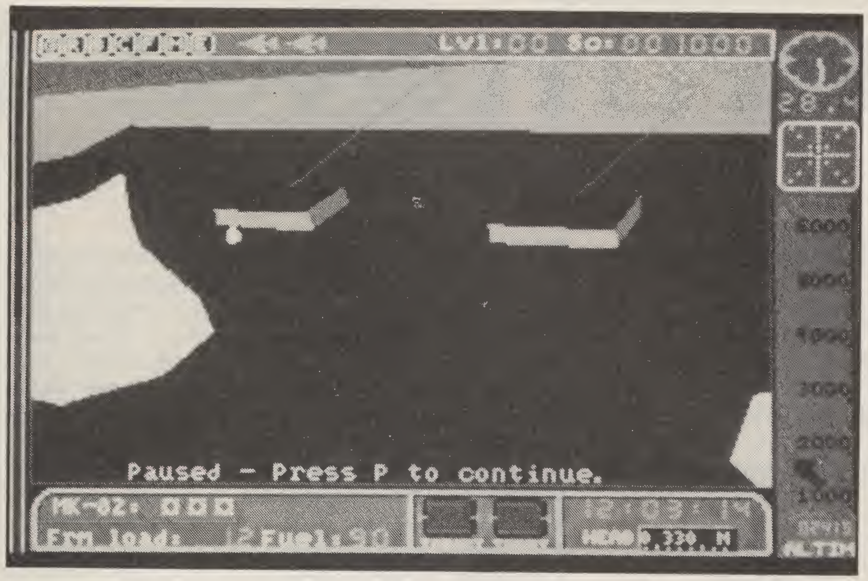
For taking out MIGs, I would personally recommend the AIM-9 sidewinders. They are heat seeking, they are accurate, but you will have to be close in order to set them off as they only have a 5 mile flight capacity. An M61 gun will take on the MIGs when dogfighting (and if they bail out then you can shoot their pilots in the sky). The best course of action is to trail the enemy, constantly firing your 500 rounds and then set of a side winder to finish them off — it will track better if you are behind the MIG (there's more heat that way) and if you are real close, then you will be glad of the F16's ability to pull up and away before the MIG blows — though I'm not sure if taking out the enemy too close will take you out as well — I never get close enough to find out!

The Dogfight has a number of objects and rules, and keeping clear of the Red's classic "Atoll" air-to-air missiles is a hard job at the best of times. There are a 1000 points to be earned upon blowing up the MIG 21s and 1500 for each MIG 23 — now I know that points matter to some people, but the best way of playing this game is to avoid looking at the total, and just keep an eye on the fuel consumption and rocket to weight ratio (it affects the plane's reaction) just waste a few MIGs — if you can.

Take It For A Spin

Sublogic Jet is a violent game, there's no doubting that, and it is all the more enjoyable for it.

With the inclusion of an obvious enemy its playability is improved dramatically over other flight simulators for the Amiga, including *Sublogic's* own *Flight Simulator II*.



Paused - Press P to continue.

The option of choosing different weapons systems is a little unreal. In reality you don't just choose a few choice weapons and get on with it, and if you are taking on MIGs you will not want to hold bombs. If you want to play the "middle east" scenarios, then it is a good thing to consider having a few bombs for blowing up oil bases. The MK82 requires only a basic accuracy.

The MIGs are traditionally faster than the F16 or the F18, but their relative thrusts are pretty weak by comparison, so the four planes are well matched as far as gameplay is concerned. A great deal is taken for granted so that the game is more playable in the long run.

Generally speaking *Jet* is one of the easier simulators to play as far as flying is concerned, you have to concentrate on your radar and weapons systems though, as the ground to air missiles and the MIGs are ruthless — as they would be in a real life situation.

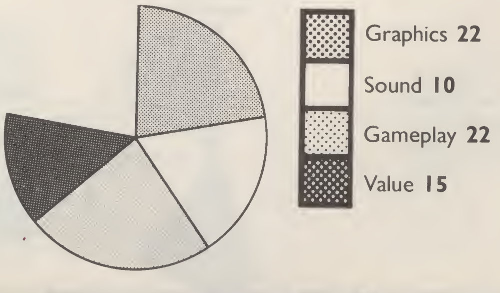
Jet itself is a game that will appeal to many people who are turned off by the usual flight simulators, sometimes flying can be the *raison d'etre* of a simulator,but the gameplay is vastly improved if you throw in a bit of violence, some destruction and a real enemy.

Add to this the possibility of loading in different scenery and I think you'll agree that *Sublogic's Jet Simulator* is a game that will have lasting appeal.

The only thing you may balk at is the price of this game. In England this will set you back some fifty quid! So I would take a good long hard look at this game before buying it — but if you are on the lookout for this sort of thing then I would recommend it.

Jet

Publisher: **Sublogic**



Primeval Soup

A new angle on a very old story — the game of life. Staring Clive Grace in the role of God!

Every now and then there comes a game that requires constant playing throughout the night until it has been finished. Your nights are ruined, your sleeping habits distorted, your coffee consumption triples — yep, that's the sign of a good game...

ECO is a weird game, there's no disputing that. The general story concentrates on one of four different parts of a planet very much like our own Earth. You play a simple form of life, in many cases this is a fly or a spider, but occasionally you are (un)lucky enough to be a slug. From this humble starting point you participate in the game of life, which, in *ECO's* case is simply to eat and, ahem!, mate.

"Is that all?" you are saying to yourself, "I mean, who wants to play real life on a computer... as if reality isn't hard enough to cope with at the moment anyway."

The fact is that I found *ECO* compulsive playing from the very first time I booted up the disk — the gameplay is slow, the screen is sluggish, the sound effects — well, the less said about them the better, but even over these problems *ECO* still stands up as probably one of the most addictive games on the Amiga to date.

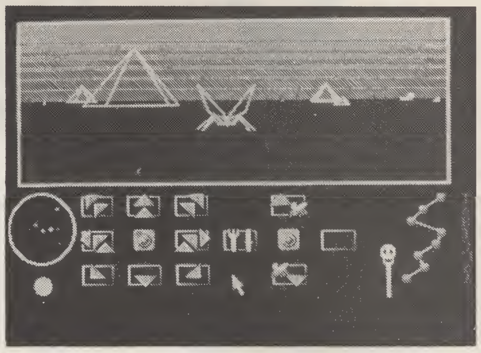
The gameplay starts thus; you start off as a very simple life form, you are placed in one of four possible climates (frozen, tropical, temperate and desert), a random set of genes are set up for you. In this terrain you must find food quickly, or you will starve to death. Once you have spotted something edible, you walk up to it, and the computer does the rest.

Anyone who has studied biology will remember the food chain whereby one form of life feeds off another form of life lower down in the chain. A simplified version of this comes across in the game, and as a fly you can eat plants, slugs and spiders, as a spider you can eat plants and slugs and so on.

Making Whoopee

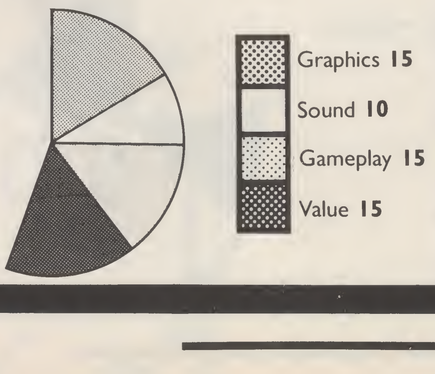
Later on in the game (once you have eaten enough to walk any distance) you may come across another of your species, you simply walk up to them and .... well that bit's censored.

Once you have mated, you are shown the screen holding the genetic pattern of your life form. It is here that you can choose any gene to alter; there are eight to choose from. By clicking the mouse button over a gene, a key will appear to the right of the gene, this allows you to place the gene in one of seven positions thus subtly (and sometimes dramatically) altering your life form's appearance and characteristics. You could give yourself a smaller body and larger wings, you could transform yourself into a plant (instant death that one) or you could think about your circumstances and choose what you consider to be the best character for the climate the game has put you in.



ECO

Publisher: **Ocean**
6 Central Street,
Manchester
Tel: **061-832 6633**



Wheel Of Life

As you eat and mate more you get more keys to unlock more genes, thus multiplying the number of possible life forms quite dramatically.

Something's Behind You

Where's the catch? It's the same as real life I am afraid — old age starvation, and predators to watch out for.

Your age is represented on the screen by flames licking round the head of a skull, the slower you are and the more likely you are to die. Get in there while you are young and you should be okay. If you have made a bad choice of animal or if the climate of your environment is so harsh that all food dies before you reach it, then you will probably die. If you are really unlucky, you may not find a mate in your environment, and no matter how much food you eat, the game will end because you were unable to carry on the race.

If you are in a situation whereby you walk or fly a lot, then you are going to burn up more fuel, thus requiring regular top-ups of food and rest. If you are in a desert, you may not get any food at all. Again, choosing your animal's characteristics carefully will make matters easier.

The game itself is represented in wire frame graphics, quite nicely too, but movement on the screen is a bit jerky although the mouse control tends to make this a bit easier. The graphics are very effective though, especially on the gene designer screen, where you can throw a dice making up random creatures for you to choose — a nice idea that.

All in all *ECO* is a pretty neat game, the fact that the jerky nature of the wire frame graphics let the game down doesn't really interfere with the fact that it is still very addictive. I was a bit miffed after unlocking all genes though, the game doesn't end when you unlock the last gene, you carry on playing until you die. I really was expecting something a bit more after devoting so much time to playing this game to win. Oh well, that's life I suppose. ■

Access

Clik

AMIGA SPECIALISTS

Unit 1A, Willowsea Farm, Spout Lane North,
Stanwell Moor, Staines, Middx TW19 6BW
Telephone: 0753 682988

VISA

SOFTWARE

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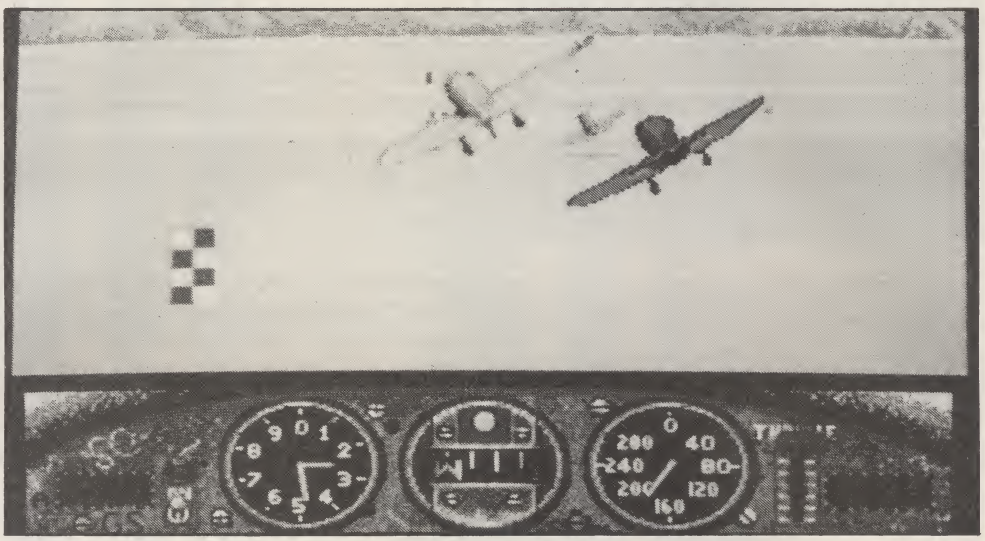
MID-AIR COLLISIONS



Motor racing in the sky — whatever next? Gordon Hamlett takes to the skies in this aerial racing simulator.

■ **Barnstorming is the name of the game in** this aeronautical racing game from Activision. Speed and accuracy are required over a total of 256 different levels in an aircraft that looks as if it consists of an engine, the wings and you.

The world and his wife seem to have gathered at the small town of Buckeye. Fliers of every race, colour and creed, amateur and professional, man and woman have turned up to compete in what has been billed as the greatest race ever. The only requirement is the courage to fly one of the GeeBee aircraft. Designed to be highly manoeuvreable in the air, it can take corners very tightly indeed, if you dare.

For most of the races, it is simply a matter of completing the course as quickly as possible. The course is marked out with flags, and points are only awarded for the time spent within the markers. In addition, should you happen to stray off course, time passes at four times its normal rate so that achieving the qualifying conditions for the next round might prove tricky. Extra points are awarded if you finish the course quickly and you may get a carry forward bonus of a few extra seconds for the next stage.

Flying Around

Controlling the plane is simplicity itself. Climb and dive, left and right are all controlled from the joystick. There are only two speeds, slow and fast and your only cockpit controls are an altimeter, speedometer and compass which are for information only.

Every fourth leg is a special event, either balloon popping or slalom, designed to test your accuracy in the air. With the balloons, you have to pop a certain number before you start to score points. It is relatively easy to hit them at low speed as you have plenty of time to change direction accurately for the next one. At the higher speed it is all too easy to get out of synchronisation and you start missing large numbers.

A Smashing Time

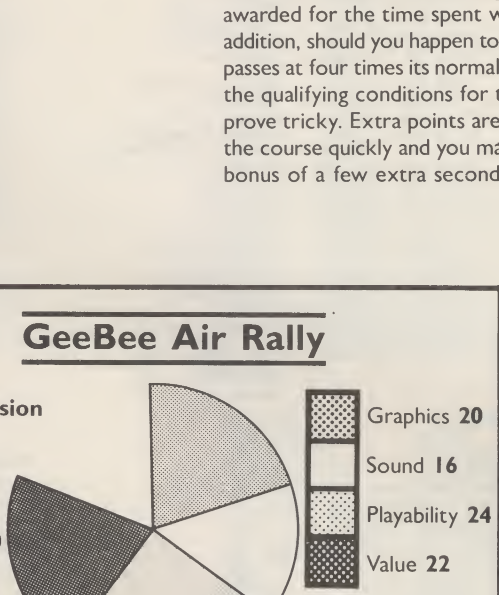
Not surprisingly, hitting objects tends to have an adverse effect on your aircraft. It is certainly possible to survive minor mid air collisions — wing clipping and the like but the tactic is not recommended. Should you be unfortunate enough as to suffer a crash, you parachute gently down to earth — some nice graphics here. The packaging shows you landing in a haystack being watched by a pretty girl but the only places I seem to land are in the middle of a desert, watched by large cacti and the skulls of long dead cattle! If you do crash, you can restart from approximately the same position that you left the race.

You get two attempts to complete each course within the allotted time. Success takes you on to the next leg, failure to (hopefully) the high score table.

There is nothing sophisticated about GeeBee Air Rally whatsoever but the game is enormous fun to play. The ability to overtake a plane by flying under or over him as well as around him adds literally another dimension to what is basically, a 3-D Pole Position. And judging from the popularity of that game, that can't be a bad thing can it? ■

GeeBee Air Rally

Supplier: **Activision**
23 Pond Street
Hampstead
London
NW3 2PN
TEL:**01 431 110**
Price: £19.99



Acquisition Inquisition

Acquisition turns your Amiga into a database workstation. It looks good, the question is, does it do your data good? Ann Owen files a report.

■ **The question about "does it do your data** good?" is answered at the end of this review. I have tried to give an impression of the very complex database system which goes under the name of Acquisition by showing the various program modules and settings boxes. My view of Acquisition comes from clicking around those boxes for the past few weeks, discovering lots of new ways to process data.

Taurus Impex announced Acquisition over a year ago and the original version has undergone some changes resulting in the current version 1.3F. The manual has been appropriately updated too with new entries into the ring-bound pages which are at least an inch thick! Hence the usefulness of a Quick-start section which takes you through the major aspects of Acquistion in logical sequence. All updates have gone out free to registered users of Acquisition.

Setting Out

Acquisition comes on three disks. The MAKE disk handles the creation of a data disk, the record format, its screen display and any linked files. The FILE disk handles the normal filing activities including data entry and editing. The EXTRAS disk contains example files and programs.

Acquistion requires a two floppy drive system but operates perfectly well in a 512K machine. There is a batch file to install the MAKE and FILE disks onto a hard disk if you own one. If a data disk is not installed when Acquisition is booted then it prompts you to enter a blank disk in DF1: for formatting. This data disk holds all the data and any linking and indexing files between databases which are grouped as projects. I found it best to have only one project per disk to ease file management.

Creating a record format is simply a matter of filing in an on-screen form with field names (up to 12 characters) while specifying their "type" by pointing at the appropriate icon. A field is usually stored in the disk file but can be defined here as a memory resident (i.e. temporary) field. There are default values to make it even easier. A "stream" of Acom commands, which take effect when filing (see below) can also be entered against each field at this stage.

The types of field available in Acquisition are:

Alphanumeric — text combined with numbers, could be a complete document
Numeric — numbers only
Date — date only, format can be defined
Time — time only, format can be defined
Clipboard — IFF format only for pictures from graphics programs such as Deluxe Paint
Custom — IFF digitised sounds

The screen display of this database record format is controlled initially by a set of display settings, effecting spacing, number of columns and so on. The Pasting module however allows you to customise the display by extending the field boxes and by adding graphics with a set of paintbox style tools.

A co-ordinate display helps you accurately position the different elements of a screen design. Whenever a clipboard type field appears, a set of show and close picture icons appears too. Clicking on these controls the separate display of IFF graphics.

As well as creating IFF data fields, you can import an IFF file as a background for your record card. This can make a screen both attractive and easier to use for an inexperienced operator. These on-screen forms are integrated into the design of the database in a way unique to Acquisition. Data can also be cut and pasted between fields and between databases, which can make data entry and presentation even easier.

Filing and Reporting

Once your definition is done, the database can be opened from the Filing module and data entered into the field boxes. Records are saved to a memory buffer before any update is made to the disk, either when the buffer fills or the QUIT option is chosen. Both key presses and menu options can be used to move through the records or to search for particular data. The records have just one key (system index) field whose definition must be unique for fast lookup and sorting.

Output of data to paper is achieved at its simplest level by choosing a graphical or text printout with the appropriate record on screen. This is particularly appropriate when using the Acom command language to produce a block graph of data held in fields of the current record.

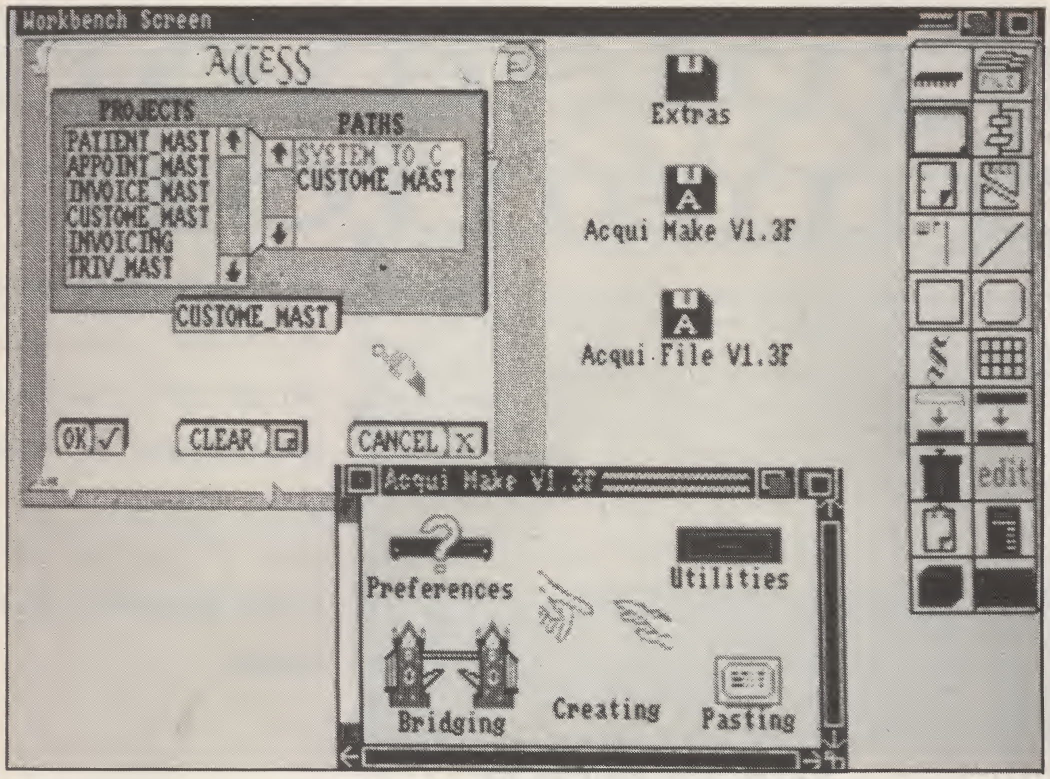
Larger printed reports are achieved via a further module, Reporting. A report definition is setup by combining text which can be prepared in a wordprocessor beforehand if required with data fields and temporary variables. The data can be "vetted" for suitability, greater than, less than, equal to and so on.

When the report is run, the user is prompted to enter values into any temporary variables. These are then printed with title text, report document, the selected field data for every record in the current database and "tail" text if needed. The report can always be "proofed" on screen before highlighting the print button for output to the current Preferences printer device. Reports can take all shapes and forms and are useful for mailshots too.

Relational

With Acquisition, filing does not end at the manipulation of a single database. Through bridging files, one database can be connected to another, each having a common field. Databases with this relationship can be displayed in separate windows on the same screen.

The database which is a "child" of the parent can automatically take data entered into the shared

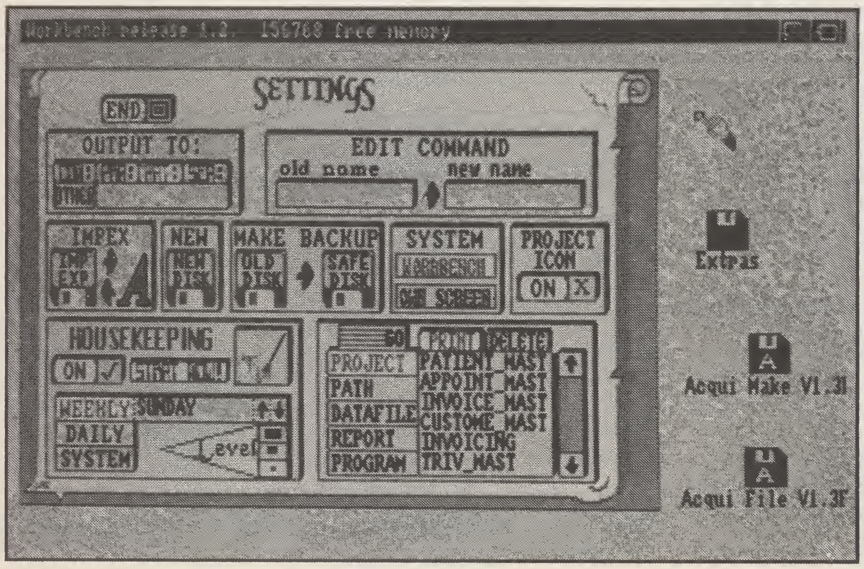


field in the parent record. Several records in the child database may have this common field and thus be related by the same information back to the parent.

Acquisition makes the setting up of this relationship particularly easy with a typical onscreen form to fill out with the names of databases and connecting file. The work is done behind the scenes and you are left to design the database to your requirements.

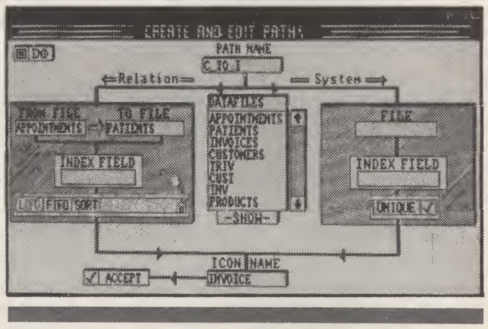
Settings

A wide variety of settings can be adjusted from inside Acquisition for both the system (such as output device) and for the database. The settings module provides a friendly means of backing up disks, printing out information for planning the database, printing Acom programs and deleting files. A "housekeeping" system also exists whereby the system prompts the user to carry out housekeeping at selected intervals, daily, weekly and so on. There are three levels of housekeeping, taking different lengths of time to complete



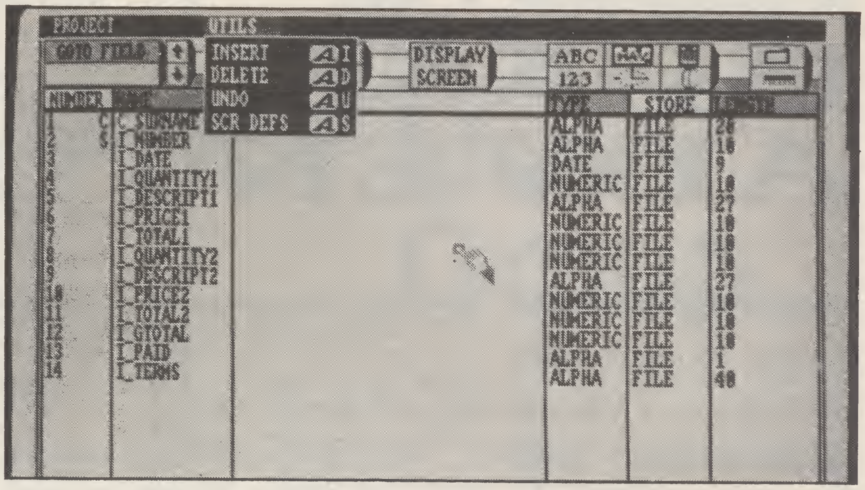
Professional Setup

There are many things to recommend Acquisition to the professional who is setting up a database — as a consultant perhaps for someone else. First and foremost there is the Acom language, a set of commands which can control the actions of the system on your data. When used in streams, which process individual fields, the control they give ranges from tidying up the presentation of the data on screen to applying search criteria to field data before creating and printing a report.



For complete database customisation, Acom is a very substantial set of commands with BASIC like syntax and many similar functions and structures, such as EVAL and IF...ENDIF. Of course there are commands specific to database creation such as ACD to set or change the active database file directory or AUTOREQUEST to handle requestor and information windows. There are date and time functions, BOX and DRAW etc, for screen design, LIKE for string comparison, error handling and input prompting.

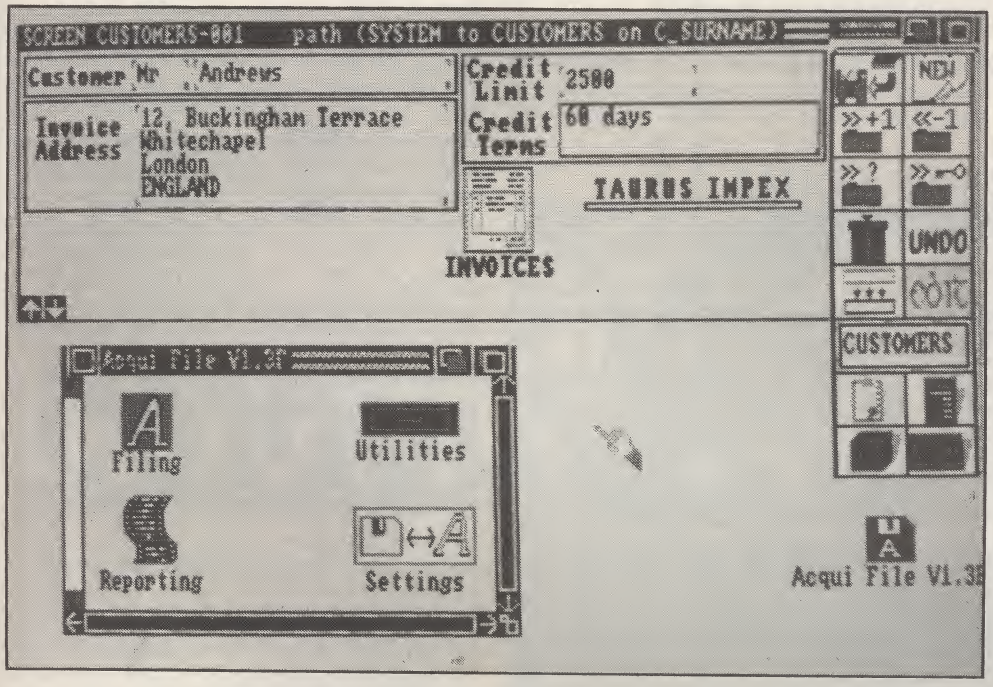
Commands like PLAYSOUND and SHOWPIC deal with the more exotic field types and there are incredibly powerful commands such as CLIPPIC which copies graphics blocks between screen windows. Commands like TRIM, PROPER, LOWER and CLEAN are also often used in streams to tidy up and make consistent text display.



NUMBER			TYPE	STORE	
1	C	C_SURNAME	ALPHA	FILE	20
2	S	I_NUMBER	ALPHA	FILE	10
3		I_DATE	DATE	FILE	9
4		I_QUANTITY1	NUMERIC	FILE	10
5		I_DESCRIPT1	ALPHA	FILE	27
6		I_PRICE1	NUMERIC	FILE	10
7		I_TOTAL1	NUMERIC	FILE	10
8		I_QUANTITY2	NUMERIC	FILE	10
9		I_DESCRIPT2	ALPHA	FILE	27
10		I_PRICE2	NUMERIC	FILE	10
11		I_TOTAL2	NUMERIC	FILE	10
12		I_GTOTAL	NUMERIC	FILE	10
13		I_PAID	ALPHA	FILE	1
14		I_TERMS	ALPHA	FILE	40

Programming a database with this sort of powerful language in support makes a usually daunting task quite an exciting prospect. The manual has comprehensive reference sections on Acom and on all the directories, files and assignments which Acquisition uses. And there are a large number of friendly error messages for all occasions! You can even rename Acom commands to suit your way of working.

There is a pretty good import utility which will allow data to be read by Acquisition in an intelligent manner for incorporation into a new or existing datafile. The special characters used to indicate field, record and file limits can be edited in a settings requestor. Selected fields in a ready-created record format will be filled by the imported data, leaving other fields free for manual input if required.


SCREEN CUSTOMERS-001 path (SYSTEM to CUSTOMERS on C_SURNAME)

Customer Mr Andrews

Invoice Address 12, Buckingham Terrace
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The import process can be controlled by Acom macros. A stream of Acom commands can be applied in the same way as they are to ordinary fields (capitalise all names for instance).

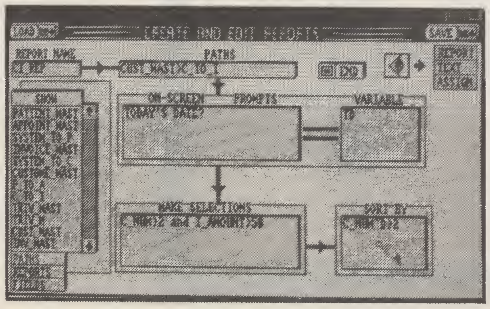
One point to note when considering Acquisition is that you will need to produce your own user documentation because the manual style and presentation is not suitable. Parts of even the Quickstart section will not be understood by the beginner to databases. But the fact that the database itself is very easy to use, once designed, means that naive users shouldn't cause too many problems and there is mention of a tutorial guide in a note on the update pack.

Conclusions

It is fair to mention that the floppy drives hold up proceedings rather too much for this factor to be ignored. Although the disk system gets faster with each new release, if large amounts of data are involved, budget for a hard disk too when considering Acquisition. Although the relation filing is powerful, the availability of only one system index might hamper some database design.

Other touches which don't require explanation but make you feel like your Amiga is paying its way are speech prompts during filing, including those which you place into your own field definitions, friendly requestor/reminder boxes and information such as filenames available on screen at all times, no guessing games.

There is also a calculator available in the pasting and filing modules which accepts values from fields you click on and from which values can be pasted back into field boxes. It all makes for a database system which is enjoyable to use and efficient in handling a variety of data types. The answer to our initial question is: it not only looks good, it is good for your data.



Acquisition
Publisher: **Taurus Impex**
Taurus House 3 Bridge Street
Guildford Surrey GUI 4RY
Tel: **0483 579399**

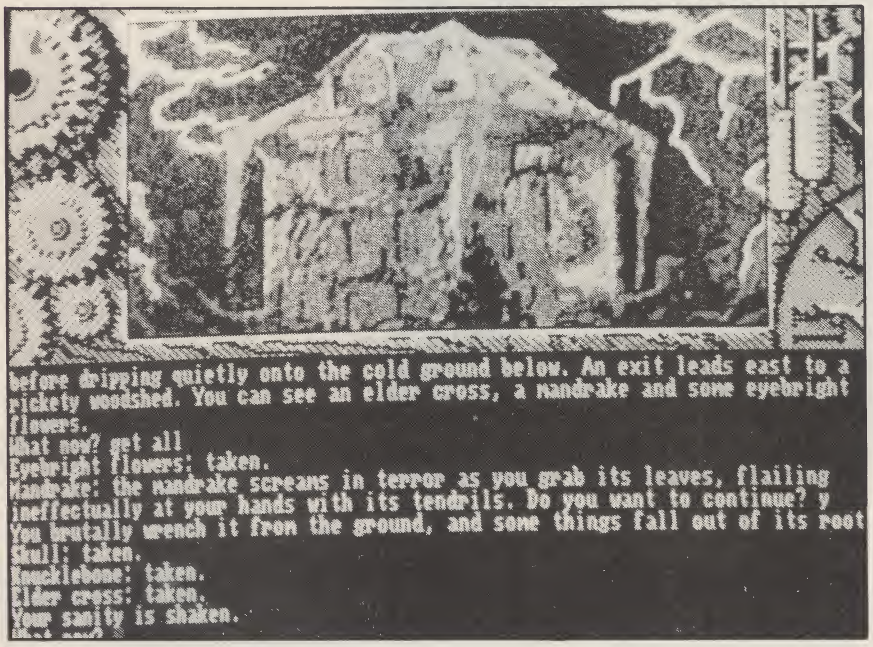
CLASSIC ADVENTURING

Gordon Hamlett takes his Amiga on a trip into adventureland with Mandarin Software's first release.

Mandarin Software is a new name in the field of computer games but it is supposed to be entering the market with a budget of one million pounds. If its first release, *Time and Magik* is anything to go by, then the name Mandarin will have the support of adventurers everywhere.

The package consists of three of *Level 9's* most popular titles — *Lords of Time, Red Moon and the Price of Magik*. There are considerable enhancements to the originals though. The most striking is the addition of digitised graphics, a huge improvement on what was never one of Level 9's strong points. When you actually start playing the games, you will also notice that the parser has been rewritten and the text expanded.

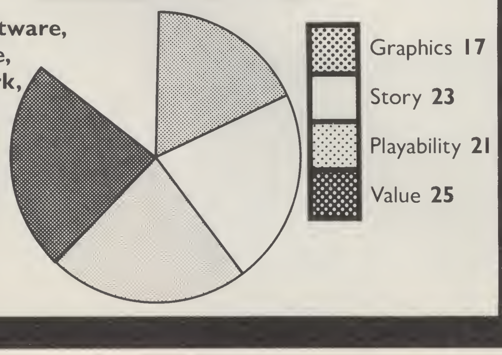
Your game position can be saved to RAM as well as to disk and there is a multiple 'undo' command allowing you to retrace through several steps if you wish to try a different approach to a problem. Commands can be easily edited rather than retyped and the pictures can be moved up and down the screen to allow you to read what has gone before. They can also be switched off if you prefer.



```
before dripping quietly onto the cold ground below. An exit leads east to a
rickety woodshed. You can see an elder cross, a mandrake and some eyebright
flowers.
What now? get all
Eyebright flowers: taken.
Mandrake: the mandrake screams in terror as you grab its leaves, flailing
ineffectually at your hands with its tendrils. Do you want to continue? y
You brutally wrench it from the ground, and some things fall out of its root
Skull: taken.
Knucklebone: taken.
Elder cross: taken.
Your sanity is shaken.
```

Time and Magik

Publisher:
Mandarin Software,
Europa House,
Adlington Park,
Adlington,
Macclesfield
SK10 4NP.



The three games, originally separate entities have all been tied loosely together. A novella sets the scene of three episodes taken from the struggles of the Guardians to protect Time and Magik. All three games can be played independently though — you don't have to complete the first before you are allowed into the second etc.

At The First Stroke

Lords of Time puts you into conflict with the evil Timelords who are determined to change world history. This they reckon will give them control over the very essence of time itself. In order to stop them, you must enter a large grandfather clock which gives you access to nine different time zones; modern, stone age, medieval and futuristic etc. A specific item needs to be collected from each of these zones such as dragon wings, silicon chips, a teardrop and a jester's cap. Only when you have all nine will you be able to defeat the Timelords.

In *Red Moon*, the only remaining source of magik power has been lost or rather stolen. The Red Moon crystal proved to be too much of a temptation offering as it did, such a source of magical energy. The crystal was thought to be secure in the Moon Tower on the island of Baskalos. One of the seven Guardians, Hagelin, became corrupted by the thought of all that individual power and devised a way of stealing the crystal. The remaining Guardians selected you (yet again!), a solitary adventurer to go forth and attempt to regain the crystal. You will have the help of several powerful magical spells to help you and if you can lay your hands on a few treasures that you may discover on your journey, then so much the better.

The final game, the *Price of Magik*, is set in a period after the crystal has been recovered. Unfortunately, the task of guarding it has unforseen consequences. Being in close proximity to the crystal's magical radiation for such a long period of time has driven one of the Guardians, Myglar, mad and he too has stolen it in the forlorn hope that it will render him immortal. He has already found a way of harnessing its power but is now suffering the consequences. It will take the efforts of a skilled magician to find Myglar, overcome his traps and finally restore the crystal once again. But it is a dangerous task and anyone attempting it will soon find that his sanity is being adversely affected. That, after all is the price of Magik.

Adventuring Necessities

These are three excellent games, especially in their enhanced versions and any adventurer who has not played them before is in for a real treat and many sleepless nights poured over his keyboard. Packaging the three games together has got to be the adventure bargain of the year.

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Star Wars

The classic arcade game comes home on the Amiga! Mary Branscombe takes on the Empire.

This is a game that needs no introduction; *Star Wars*.This arcade classic sets the standard for arcade games to meet, for years after its release. It offered state of the art graphics, sampled sound effects from Industrial Light and Magic (the special effects team behind all the Star Wars films) and quite possibly the fastest gameplay ever seen on an Arcade machine at the time.

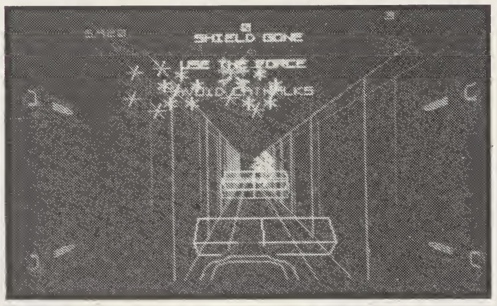
The funny thing is that *Star Wars* in the Arcade never got boring, it never got repetitive, and it never got so hard as to not be playable — in short, it was a smash hit game that easily commanded its (then) high price.

Star Wars on the Amiga had to happen really, the Arcade machine and the Amiga both share the dubious honor of being "state of the art", and as a result both have a lot to live up to — certainly when it comes to converting this game down into a personal computer!

Starting off by booting up the disk, the screen clears and displays a more or less accurate starting display giving the usual blurb and instructions. Wait for a bit, and you get the truly awful theme music that is both out of tune and out of time. Leave it out Domark, who are you trying to kid? The music sounds like a school orchestra with a ban on overtime, the Bass is off, the trumpet is decidedly dodgy and it doesn't even make good use of the Amiga's sound generating capabilities!

After that brief, but rude start, the game starts for real. You are in control of a rebel forces X wing fighter, you are Luke Skywalker, hero and general teenage hero on a mission to waste the Empire and Darth Vader for good!

If you have lived in a Nuclear Bunker for the past 11 years, then you will be forgiven for not knowing the plot of *Star Wars*.



You Must Be Joking

You, and your rebel forces are to fly to the Death Star (the Emperor's own personal taste of Armageddon), attack the TIE fighters that hinder your route, fly down onto the surface of the "star" and take on the defence systems. Once you have successfully navigated this second level (which is left out on level one) then you come to the last wave — the trench. This particular aspect of the game was probably the most copied part of the Arcade Game when it was released. You fly down into the trench, firing at the bolts thrown at you from the gun turrets (or if you are lucky at the turrets themselves), whilst avoiding the cross beams that progressively get harder the higher up the game you go. Once you have reached the end of this screen all that lies between you and the end of the game is the missile exhaust port, the Death Star's only apparent weakness — one well placed shot into the port will result in a chain reaction being set up and the Death Star's magnificent kablooie at the end.

Hook your Amiga up to the Hi-Fi system and I reckon your speakers will have trouble reproducing the finer qualities of this exceptionally exquisite example of an almighty bang... try it, your neighbours will think the bomb had just dropped!

After that, the game immediately drops you into the next level back at the first wave — faster TIE fighters, faster missiles, harder trench, more towers to be shot down — in short, more mayhem, and I love every minute of it! (I worry about you sometimes — ED.)

Now moving onto the finer points of this game you will start to notice what has been left out of the game. Certainly all the graphics routines have been copied to a tee (apart from the explosion at the end), but on the sound effects front the game is quite different. For starters, there's no R2D2 bleeping away in the background (he is the cute little chap who gets his head blown off at the end, but lives to appear in the next two films). There's no Darth Vader,oh, sure his ship is there throughout the game, and shooting him means mega-points. The really annoying thing is the way the samples have been taken — straight from the film — lock stock and barrel!

Flying Your Ship

You can control the game by using the mouse, or you can use a joystick. Personally I preferred the mouse control, which gives the game a little of the feeling of *Starglider* in the process, the game was more controllable and, with a little practice, faster as a result.

Star Wars on the Amiga is a vast improvement on other versions of this game on other machines, it is faster than the Atari ST version, and the use of sampled sound effects makes the game more and more credible as a copy of the real thing — Heck, it plays like the real thing, and although you haven't got the four channel stereo sound and the large screen (something that was lost when the arcade game was crammed into an upright game console), this is about as close as you will get to the real thing.

Star Wars is a game that will probably sell Amigas, I am aware of at least one person who has decided to turn his back on a lifetime of MS-DOS on the IBM PC and move over to the Amiga just to play this game — if that isn't a recommendation, then I don't know what is!

Star Wars

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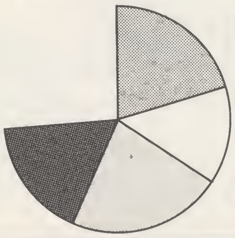

▨ Graphics **20**
☐ Sound **15**
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COMMODORE BUSINESS CENTRE

The Trials and Tribulations of a Trainee 16 Bitter

Let Allen Web take you through the teething stages of your Amiga.

■ **Those of you who are familiar with** *Your Commodore* may have noticed, that over the years I have obtained excellent service from my C64. Indeed I still consider it to be the best 8 bit machine around. About six months ago, however, I reached the conclusion that it was time to become a computer yuppy and buy a 16 bit machine. As far as I could see, the Amiga's specification settled the question of which to get although its price didn't exactly help. So just before Christmas I bought an A500/Philips CM 8833 combination. This article is to recount my experiences and a few tips and wheezes which I've discovered. There will no doubt be a number of knew-it-all readers who will consider that most of what I have to say will be obvious, but please be patient — my conclusions have arisen only from many hours of frustration and anguish!

The first thing I realised was that Commodore have not learnt anything in terms of marketing and presentation. Although the manuals are better produced than those for the 8 bit machines, there is no pro rata improvement, bearing in mind the complexity of the Amiga. In fact, you need to spend around £100 to get the full range of manuals. This is unforgivable and at times I would willingly do someting really nasty to the person responsible for the manuals!

Newcomers to the machine will probably be overwhelmed by the (unnecessary) complexity of the Workbench. How many other machines give you three ways of formatting a disk? They will also discover that vital information is often missing. A trivial example is the fact that my Delux Paint Package did not come complete with details as to how to run it or prepare a data disk. If I, as a moderate computer literate, took some time to solve these problems, how long would a novice take? OK, moans over now it's down to some ideas and tips.

First of all lets look at how to prepare a data disk. The fact is, as far as I can see, you need very little in terms of information on a data disk other than the data itself. My approach in the first instance would be to format your disk. Two methods can be used.

- Insert a new disk in the drive, click its icon once, select INITIALISE from the DISK menu and follow the requesters. This will give you a disk named EMPTY. To rename it, click the icon once, select RENAME from the WORKBENCH menu and input the new name as requested.
- Open the CLI via the SYTEM drawer. Input the command:

FORMAT DRIVE df0: NAME myname

Once you have a clean disk, it is wise to create some drawers to keep the information separate. Again, my way of doing this is to:

- Insert your data disk and open its window by clicking its icon twice.
- Insert your WORKBENCH disk and open its window.
- Click the Empty drawer in the Workbench window once and holding the left mouse button down drag the icon into the window which belongs to your data disk. Follow the requesters and you should get a copy of a drawer called EMPTY on your data disk.
- Rename the drawer by clicking its icon once and selecting RENAME from the WORKBENCH menu.

You can repeat these steps as often as required. You can alternatively use the CLI MAKEDIR command and then copying the appropriate info. file, but this is an untidier method than the first.

The dragging icon method of copying files and drawers is very powerful, but what do you do if the file doesn't have an icon? The answer is to use CLI. Once you get used to CLI it isn't too bad and is in fact very similar to the DOS sysem used by IBM PCs *et al*. Something you discover very quickly is that while the examples in the manual work well, not everything is as satisfactory. The main problem is that when you use a command this must be summoned from the Workbench disk. If you don't somehow tell the machine which disk to work on, it may try to act on the Workbench. The answer is to load the routines you need into RAM disk and you can then put the Workbench disk away. There is a method (not described in the manual) using ? to force the routine to act on the disk inserted but I'll leave that to a more detailed treatise on the CLI.

Page 7-18 of the manual uses the RAM disk approach but doesn't explain itself. For most purposes, you need to have the following routines in RAM disk:

c/cd	change directory
c/dir	directory
c/info	disk info
c/list	list files
c/copy	copy files
c/rename	rename file
c/makedir	create a directory

You will note that all of these commands are held in the c directory. This directory also holds many other files. Most of which are not described in the manual. The procedure is as follows:

- Enter the CLI via the SYSTEM drawer.
- Copy across the files you need using:

COPY df0:c/cd ram:

Repeating for each file you need. For copying you need c/cd, c/copy as essentials and c/dir, c/list, c/info as useful aids.

- Enter: **cd ram:**

This transfers control to the RAM disk allowing you to put the Workbench disk away.

- Insert the disk you wish to copy from. If you want to look at its contents, enter cd df0: to install it. Dir, list etc will then act on the new disk. Copy the files you want to transfer to RAM disk using:

COPY df0:filename ram:

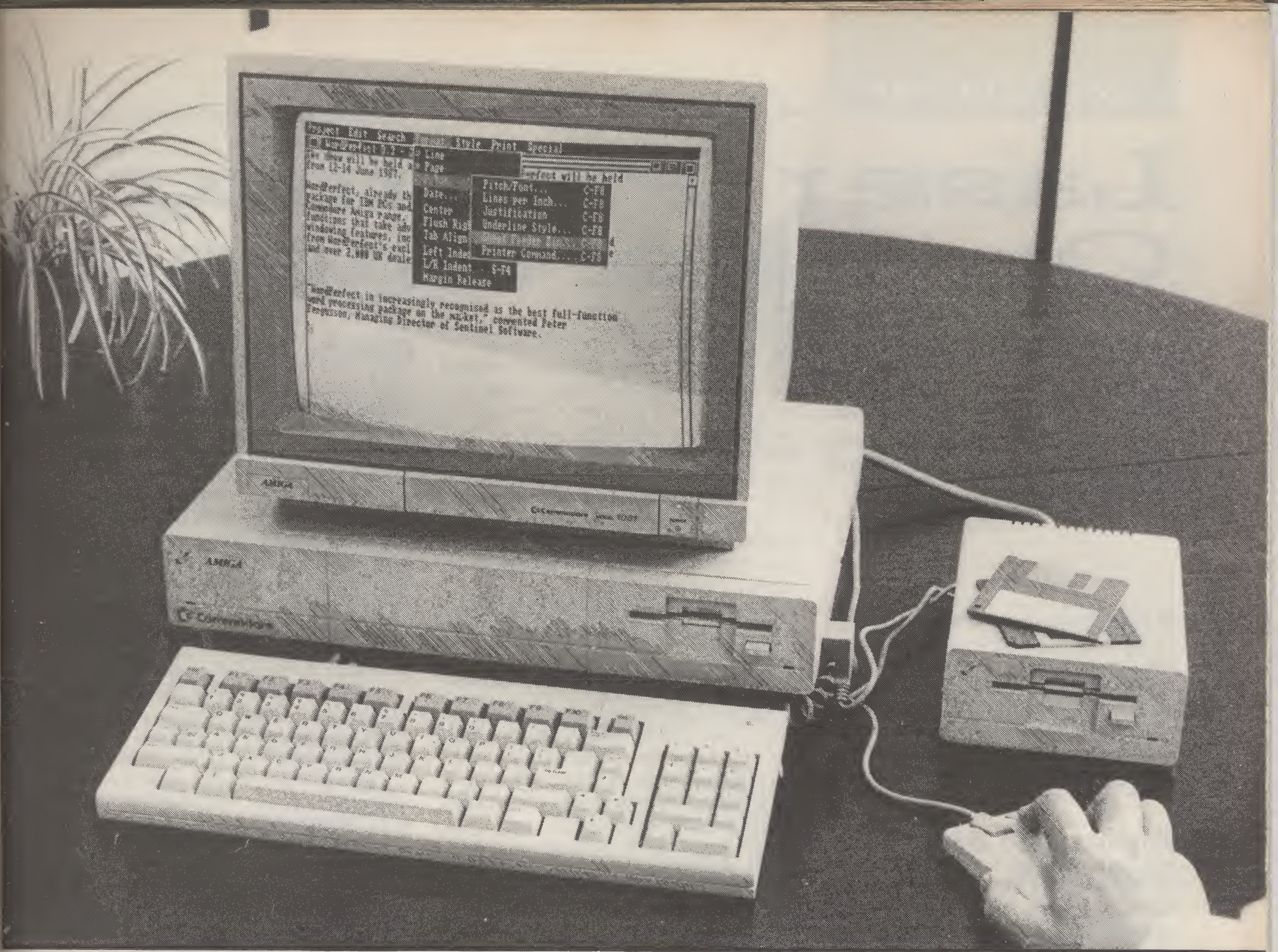
Insert the destination disk and install it using cd df0: Copy the files to it using:

COPY ram:filename df0:

I know that this is very tedious but it does work and is selective. The alternative is to copy the full directory and erase the unwanted files.

Because of the poor command entry system of the CLI, the copying of files onto RAM disk is rather lengthy. A cool and trendy way of getting it done is to tweak the startup sequence to do if for you. The technique is easy but needs care. Page 7.22 of the manual gives some help. My way is as follows:

- Make a copy of your Workbench disk and put the master away.
- Enter CLI via the SYSTEM drawer and open the CLI window to the full size of the screen.



- Type in: **Ed s/startup-sequence**

You should get a list of instructions.

- Move the cursor down to the line containing LoadWb and press RETURN. The line above should open up.

- Move the cursor into the blank line. Try entering the following pressing RETURN after each line:

```
echo "Loading tools to Ram disk"
copy df0:c/cd ram:
copy df0:c/dir ram:
copy df0:c/info ram:
copy df0:c/copy ram:
echo "done"
```

When all is complete, press **ESC X** followed by return to save the modified sequence. If you haven't made any errors, next time you boot the disk you should see the messages and the tools should load to RAM disk. Appendix B of the manual gives the full range of commands for use with the editor. Don't be afraid to experiment, if you mess things up you can always recopy the master Workbench and try again. That's exactly what I did!

All of the activities I have described become much simpler if you decide to invest in a second disk drive. The main drawback, apart from the cost is that the drive immediately pinches around 20k of memory. I never cease to be amazed at the amount of memory that gets used by software on this machine. Notwithstanding its half meg of ram, the Amiga feels like a 32k BBC!!

One area full of potential for fun is the redesigning of icons. You will have no doubt encountered the icon editor in the Workbench. If you haven't, it's the icon in the SYSTEM drawer titled Iconed. (If you want to get at it quickly drag its icon into the RAM disk window or copy system/iconed and sysem/iconed. info using CLI) I prefer to access the editor from CLI since the person who wrote it omitted to include a directory option.

Icons are generally the name of the drawer, tool or disk with a .info suffix. You will have noticed that most of the icons simply invert when you select them. You can create animated icons using two images. This is done by using a program in the TOOLS drawer of your Extras disk called IconMerge. Iconed is very handy for drawing icons from scratch. If, however, you have an IFF format drawing such as those made by Delux Paint or Digipaint which you want to convert to an icon, there is an excellent utility in the GIZMOZ package. Using it to create an icon and iconed to tidy it up, you have an almost ideal system.

One area where the Amiga is well provided for is provision for printing. Bit map dumps are available with the memo-pad and to dump screen contents. One problem is finding the driver to suit your particular printer. There are a range provided of driver provided but they don't always work as expected. My particular printer is a Star SG-10. Surprisingly, the Generic driver won't work. After much toil and irritation, I have found that the Epson JX-80 driver works well but you must remember to set the printer to IBM mode and disable automatic line feeds.

Finally, here are some thoughts on software. it is an interesting fact that there are a number of complementary packages on the market and by using the IFF format, they can be used to provide remarkable results. You will have a copy of Delux Paint since it is provided as a freeby. It's quite a good package and with it you can create some decent pictures. Another excellent package is Digipaint which by using the HAM mode allows you to obtain 4096 colours on the screen at once. It can also be used to polish up Delux Paint pictures.

For musicians, Music Construction Kit (Electronic Arts) and Aegis Sonix are worth a look. The construction kit is probably the ultimate music editor. Aegis Sonix, on the other hand, is an excellent synthesiser. Again, you can transfer files between them to the best from both.

If you want a decent set of utilities, try Gizmoz (Hi Tec). This offers all sorts of handy routines and is sure to give you hours of harmless fun. On the games side, I recommend Xenon (Melbourne House), Marble Madness (Electronic Arts), Chessmaster 2000 (Electronic Arts) and Shadowgate (Mindscape Inc). If you have an Infocom adventure, try using RAM disk when you save a game. It works and provides an instantaneous RAM Save and RAM load.

Laser Printing On The Cheap

In this two-part series, Jon Vogler uncovers seven low-cost (!) laser printers and discovers they are not always what they seem.

Something which is always closest to our hearts is the subject of money. Low-priced is an extremely relative expression when used to describe laser printers, given that they cost about six times the price of a dot-matrix machine. For this review the price bar was set at £2,200 (ex. VAT) and I expected the machines to be similar. However, I was astounded at the variation.

Engines And Badge Engineering

Developing the electro-mechanical mechanism of a laser printer is an expensive business, way beyond the resources of most printer manufacturers. Designing the electronic logic to control such a device on the other hand is well within the budget and the competence of any company accustomed to designing computer printers. The result is a spate of new laser printers, from most of the well-known manufacturers, that use one of two "bought-in" electro-mechanical "engines" and couple them with electronic circuitry designed (and sometimes produced) "inhouse", a personalised name badge and, in some cases, alternative control panels and paper-handling equipment.

Down To Business

At the lowest end of the price range is an engine produced by Rocoh which is incorporated into the Olympia Laserstar 6, the British Telecom MP2006, the Epson GQ-3500 and the Oki Laserline 6 not forgetting Ricoh's own PC Laser 6000. Slightly more expensive is a Canon engine installed in the Hewlett-Packard LaserJet Plus, the Brother HL-8 and Canon's own LBP-811. Both Ricoh and Canon make other engines and so do other manufacturers. There are two points to bear in mind when buying a laser printer:

- Decide which engine, which will affect physical robustness, paper handling, ease of maintenance, cost per page and overall price bracket.
- Decide whose badge, which affects emulations, range of print styles, graphical abilities, ease of setting and precise price within that bracket.

Do not be frightened of "emulations". It simply means "from which well-known printer (not necessarily a laser) does it copy the control codes." If you have a computer or wordprocessor set-up that suits all your current needs and you want to replace a daisy wheel or dot-matrix printer with a laser, it may save trouble to get one that will emulate your current printer. On the other hand buying a laser with more ambitious emulations, particularly graphical abilities, may extend your current capability. Many laser printers will emulate several other printers, so you have quite a choice!

The Canon Laser Engine

The Canon LBP-811 Laser Beam printer uses Canon's own LBP-SX engine. On the whole it is well-constructed and operates smoothly and quietly. There is a 16 character display but the brightness cannot be varied, and it is rather difficult to read unless the light is good. There are two speeds on the cooling fan; for a short period after printing has taken place the fan runs extra fast and rather more noisily but, when the machine has cooled sufficiently, fades to a background whisper. The paper handling is excellent; even paper which I had deliberately crumpled fed smoothly through, although inevitably the print quality suffered.

The printer comes with dual interfaces, as well as having the capacity for two font cartridges. The toner and drum come in a single unit, replaceable after 4,000 copies at a cost of £95 which works out at just over two pence per copy (excluding paper and power). The engine itself is rated at a minimum 3000,000 copies although Canon estimate it will prove better than this in life-cycle tests. The standard machine comes with half a megabyte of memory and, for an extra £500 you can fit another megabyte, which will enable you to handle A4 bit-mapped graphics.

Features

Following its fairly impressive construction, it is rather disappointing to find that the Canon has very unspectacular features. The basic machine comes with Diablo 630 emulation only and likewise the range of built-in fonts are extremely modest — Courier (the fixed-pitch typewriter font), in Roman, bold, italic or a small size foot note, available in portrait or landscape orientation and nine languages plus two IBM character sets. There are 16 font cartridges already available plus another ten are on their way, and if need be a specialist company will "blow" any other font that you need. Each cartridge costs aprox. £190.

The machine is as fast as it claims and did in fact slightly exceed the rated eight pages per minute and, more important, managed seven pages from a standing start.

Control Panel

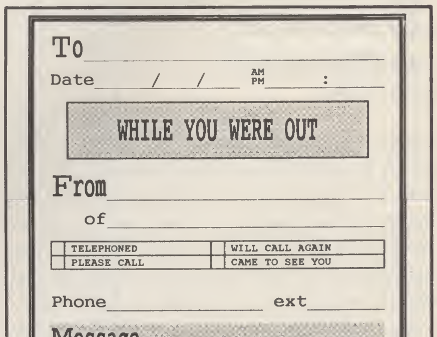
The control panel is highly effective but difficult to see under some lighting. As well as the display there are indicators to show: READY which means it has power and has warmed up; ALARM which indicates that there will be an error message visible on the display; DATA which shows there is data in the machine awaiting print; ON LINE and FORM FEED which are self-explanatory. There are also four dual purpose buttons which in one mode: continue printing after a stoppage caused by an error Print test sheet or a list of fonts currently in the machine Reset the machine parameters and Enter menu mode.

The second function of each is to move through the menu tree, either up or down to another level of menu or "sideways" through the various options on a given menu level.

Settings cover the basic operations of: selecting the interface, with baud rates ranging up to 19200 and choice of communication parameters, with **ETX** as an option in addition to **DTR** and **xon-xoff**. Saving current printer settings for resumption after switch-off; resetting to factory values; loading fonts from cartridges; switching "daisy wheel" which means, essentially, using a different national character set; switching between landscape and portrait orientation (paper upright or lengthways). Selecting boldface — if no bold font is present there is an internal macro that you can use instead, and setting page margins; setting the number of print copies. This, which should be a straightforward task as it is frequently done, requires quite an elaborate journey around the menu tree and involves a total of some dozen switch pushes in all; most unergonomic!

Macros

There is a powerful macro printing facility which is not explained adequately in the



To____________________

Date____/____/____ AM PM ____:____

WHILE YOU WERE OUT

From____________________

of____________________

	TELEPHONED		WILL CALL AGAIN
	PLEASE CALL		CAME TO SEE YOU

Phone____________ ext______

Message____________________

Operator

Any of the fonts can be expanded by up to four times in height or width, so that effectively you have 80 different type sizes to choose from.

handbook. The only real description I could find was for a macro held in ROM, which prints four built-in forms. Using the control panel you select numbered macros and the machine prints a form for fax messages, a standard lined paper sheet, four rather elegant telephone message slips (Fig 1) on a single A4 sheet and so on.

Conclusion

A serious drawback to the Canon is the lack of built-in Hewlett-Packard Laser Jet Plus emulation. Otherwise I considered this to be a good printer though poor documentation didn't help. Operating costs are low, but if you want more than the most basic range of fonts you will actually pay nearer £3000 than £2000.

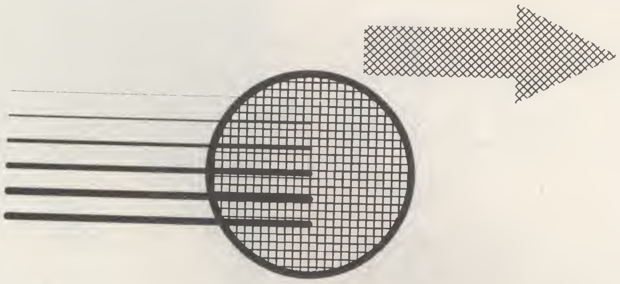
Olympia Laserstar 6

This machine uses the Ricoh print engine. However the old proverb about making a silk purse out of a sow's ear comes to mind because the parts supplied by Ricoh leave much to be desired, both in manufacture and in design. The few good points the engine has includes:

- Both serial and parallel interface are built-in.
- There is a choice of face-up or face-down, in number sequence, presentation of the printed copy (although for the former you would need to buy an optional face-up paper tray).
- Manual paper feed is provided, for envelopes, overhead transparencies, sheets of labels or sheets of non-standard thickness paper.
- Toner replenishment comes in a separate unit from the replacement drum and costs £80 for 10,000 pages and collector unit plus drum costs £163 for 20,000 pages which sets operating costs at two and a half pence per copy in addition to costs of paper and power.
- The machine is small in size and modest in weight.

Now we come to the bad points which I'm afraid are far more numerous.

- There is no basic metal frame.
- Many plastic components are thin and badly designed.
- Metal parts are very thin and flimsy.
- All adjustments to the paper hopper are stiff and awkward.
- The control panel uses cream, brown and black colours which are difficult to read in some instances.
- The toner cartridge does not seal completely, and after three hours printing, the toner lies loose!
- Compared with other laser printers the machine was quite noisy: especially the paper feed motor.
- The paper handling system is intolerant of any slight irregularities in the paper being fed.



GKS GRAPHICS ON THE OLYMPIA LASERSTAR 6

Excellent Electronics From Olympia

So much for the sow's ear, let's see how the German company, Olympia have transformed the machine. They provide one megabyte of memory as standard, expandable to two megabytes, yet still keep the price of the machine under £2000 (ex. VAT). Then they exploit this abundance of memory by several devices which include:

- Eight separate resident fonts, offering five different point sizes, three different pitches as well as proportional spacing and six different faces. Any of these can be expanded by up to four times in height or width (Fig 5), so that effectively you have 80 different type sizes to choose from!

- Olympia offer a "style card" service (Fig 6) which is a card you can have custom-designed for your own business.

GKS Vector Graphics

Although there is no complete page description language, and plans for PostScript are yet to be announced, there is a built-in vector graphics capability using a graphics kernel system (GKS). In contrast to bit-mapped graphics, where you define the colour value for every single pixel or print dot, vector graphics is only efficient with geometric shapes. Thus a straight line can be defined by a mere half dozen or so bytes of data.

The range of shapes is quite modest and includes filled areas, circles, lines, arcs, segments and bars. Line width can also be specified, as can mode (for broken lines) and colour, which uses a variety of raster combinations from solid black, through vertical, horizontal or oblique shading, or oblique criss crossing, dot patterns and so on down to pure white (Fig 3). There is a means of defining whether overlapping shapes will be transparent or opaque to those below them. Finally there is a facility for defining bit-maps, permitting free-hand or similar variations from the strict geometric shapes.

For those who just require simple office graphics the GKS vector is better than full page description language or a bit-mapped graphics package because of its economical use of memory.

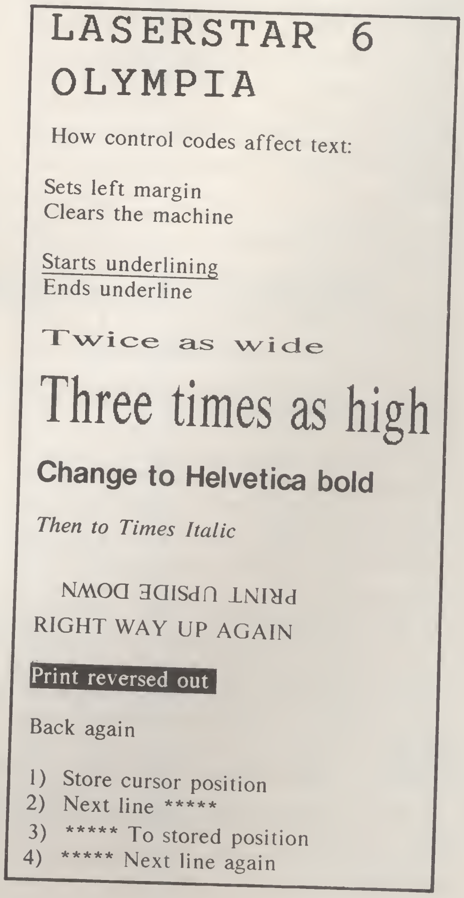
Control Panel

Olympia extract the maximum from the rather unergonomic Ricoh control panel, which offers only two characters of display. With no more than half a dozen switch presses you can select typestyle, portrait or landscape paper orientation, interface, language set, printer emulation.

Error messages are also handled through the control panel lights and display. The indicator will tell you what part of the machine is at fault so you know what needs replacing.

Conclusion

All in all, a frail and badly-made machine although in the right environment, considerable power and flexibility, in the way of simple standard graphics, is on offer at a fairly modest cost. Overall I do not recommend this machine; basically I don't feel it would stand up to the rough and tumble of office life.



LASERSTAR 6
OLYMPIA

How control codes affect text:

Sets left margin
Clears the machine

Starts underlining
Ends underline

Twice as wide

Three times as high

Change to Helvetica bold

Then to Times Italic

PRINT UPSIDE DOWN
RIGHT WAY UP AGAIN

Print reversed out

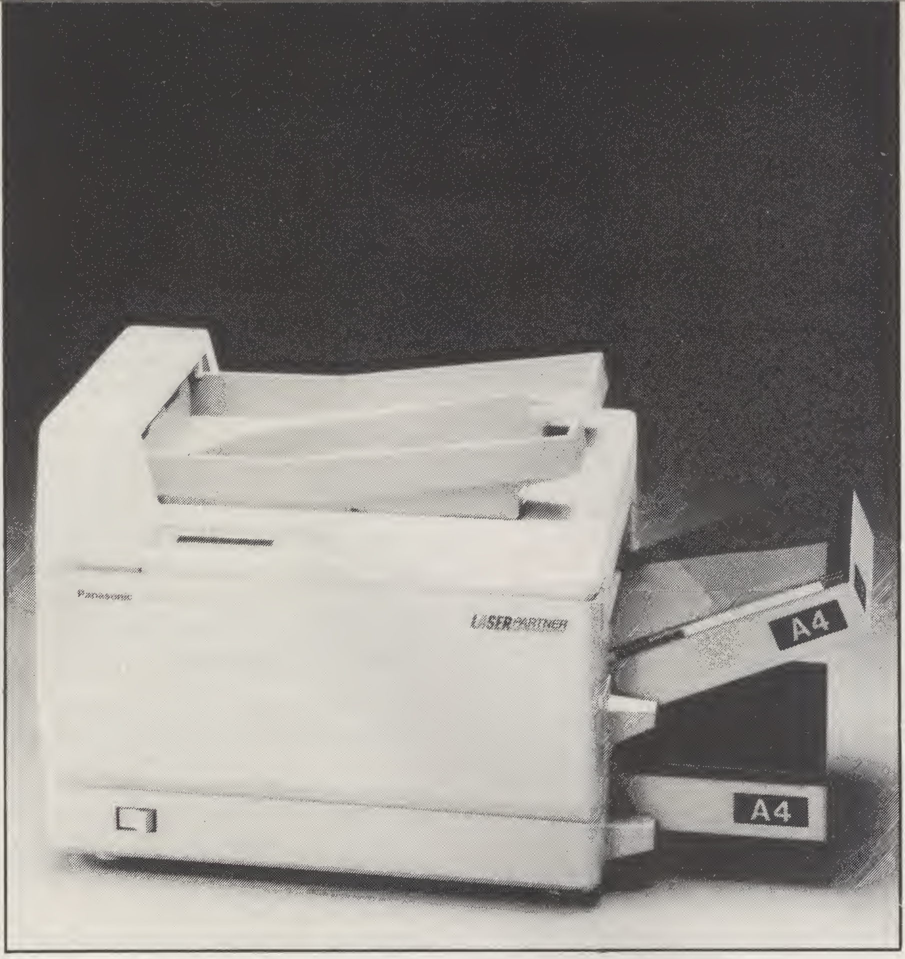
Back again

1) Store cursor position
2) Next line *****
3) ***** To stored position
4) ***** Next line again

The Power of Panasonic

Panasonic, like many Japanese companies, is known, not as an innovator but as an expert at getting the best out of the current state-of-art. The Panasonic KX-P4450 (Fig 4) is superior in value for money and specification. It is better made, has more features and is easier to use, for a lower price, than any laser printer I have tested so far.

The KX-P4450 is a solid, 11-page-per-minute, two input cassette machine with page number sequenced, face-down presentation, superb menu-driven panel-control, dual interfaces, low running costs with replacement of toner from a simple bottle, independently of the drum and with optional font cartridges, all for a price very close to £2000 for the 500 Kbyte version.



Panasonic — impressive 11-page-per-minute.

Performance

First of all the speed; it fairly rockets along, spewing out a page every six seconds, with that eerie silence that is the joy of non-impact printers. Of equal interest to the manufacturer's 11 pages-per-minute rating (which I confirm) is that, from a standing start, it did eight successive pages of an A4 text document in the first minute! The model I tested had one megabyte of random access memory which enables it to do a full page of bit-mapped graphics, at three hundred dots per inch, at a time.

Emulations include HP Laser-Jet Plus but Panasonic blush at naming a rival so blatantly and call it the Panasonic LP! In addition there are emulations of the Diablo 630, the Epson FX286 and IBM ProPrinters I and 2. Finally, the machine can reject all this schizophrenia and just be itself and use Panasonic's own control-code system, (known as the Panasonic KX-P1092 emulation, although you cannot find any machine called by this name in Panasonic's current product list because it is being replaced by the KX-P1083 which is, in any case, Epson and IBM compatible. Help!). For any of these emulations it can either use a parallel (Centronics) or an RS-232 serial interface, with a range of baud rates from 300 to 19200.

The basic machine comes with Courier (typewriter) fonts built in, at 10, 12, 15 and 16.66 characters per inch pitch, plus Century proportional spaced font. Print format can be normal, emphasised, double, double-width, underline, super and sub-script and italics. The character sets are basically those defined by the emulations, with a full range of "special" characters, corresponding to ASCII values 128 to 255.

Construction

To be blunt, the Panasonic printer is built like a battle tank, weighing in at 32.5Kg so the unpacking instructions come with a stern warning that two people should lift it! However, it is surprisingly compact. The input cassettes are very deep; you can have plain paper in one and letterhead in another and switch between the two with a toggle on the control panel. However, you have to be off-line to do so — I'm afraid you can't use it as a handy way of printing a five hundred page document without stopping.

There is an optional envelope cassette but, sadly, no provision for manually feeding envelopes, for example through a "by-pass" just above one magazine. For general office correspondence you need to use one cassette for front-page letterhead and the second for follow-on plain sheets. To print the envelope you will therefore need to change magazines — bother!

Although the basic construction substantial (to say the least!), the plastic shell is not of the same calibre: panels are thin and flexible and many lugs and handles are poorly designed, with sharp internal radii on corners. In other respects the physical design is good.

Control Panel

The greatest glory of this machine is the 16-button control panel which sweetens the normally painful process of printer configuration. It comes with a variable contrast liquid crystal display (and variable means you can really read it, regardless of the light conditions) and six indicator lights. The printer powers up in on-line mode unless there is an error detected. If no form-feed command is sent at the end of a text, the final page of data will remain in the printer until the print button is pressed. You can add extra functions to the carriage return, line-feed or form-feed control codes to match your wordporcessor (for other applications software) for example by adding a carriage return to the line-feed function, selects the appropriate font, either from the inbuilt set or from an optional cartridge. Interface conditions:parallel Centronics or, in serial mode, a menu choice of protocols (DTR plus or minus, X-on/X-off or ETX/ACK — I don't know what they mean either, but hopefully the dealer from whom you buy it will ensure that it is cabled correctly, and will tell you which protocol to use), a range of baud rates, parities, data length and numbers of stop-bits selects the printer whose function you want to imitate.

Conclusion

The Panasonic, KX-P4450 represents excellent value for money. It is very fast, easy to use and has dual paper input trays. The only significant flaw is the lack of a manual paper feed. If you do not need vector graphics or a page description language, or if you need one but are content to wait for more than six months, then I recommend this as an excellent buy.

commodore

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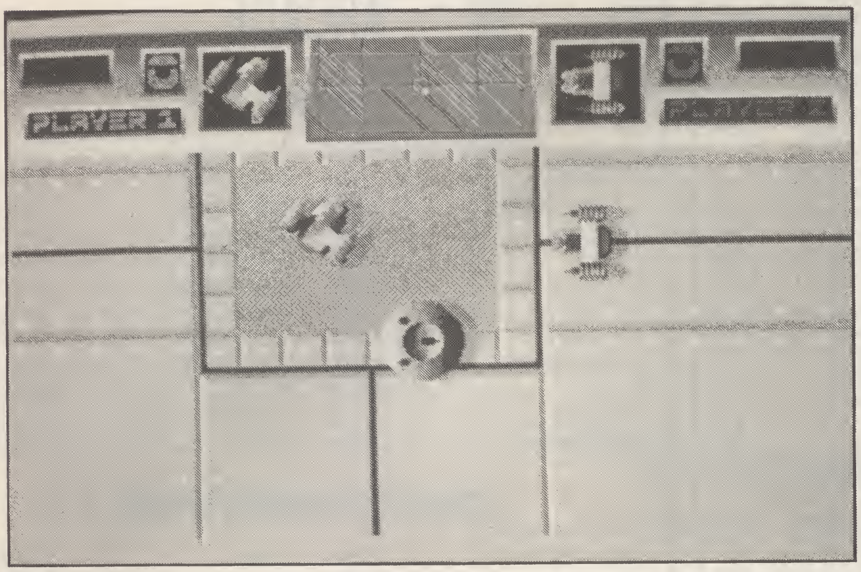
Blastaball

Everybody stand back, Clive Grace is taking a look at the latest, fast action, arcade game from Mastertronic.



Blastaball is another of Mastertronic's rapidly expanding range of Amiga budget games, and in the past they have proved to be little gems — games like *Space Ranger*, *Feud*, *Ninja Mission* and *Plutos* have all proved themselves as minor classics, nothing too brilliant mind you, but with change from a tenner, *Mastertronic* has always, I believe, looked more at value for money than gameplay, is there a difference? I should say so!

Take this game as an example. The idea is simple, the graphics are good, but not that good. The sound effects are passable — the only problem is that there is very little of a game on this 3.5 inch disk. But for £9.95 there is a certain amount of value for money.

Blastaball is set in the future where two players battle it out in an arena by knocking a puck around. The object of the game is to get the puck into either the opponent's boundary line (for one point) or into their goal area (for two points). Of course the fact that you are in a space ship armed to the hilt with missiles is merely icing on the cake.

The game is a sort-of computerised two-player ice hockey — without the blood, broken limbs and healthy moral attitude that normally go with this type of game.

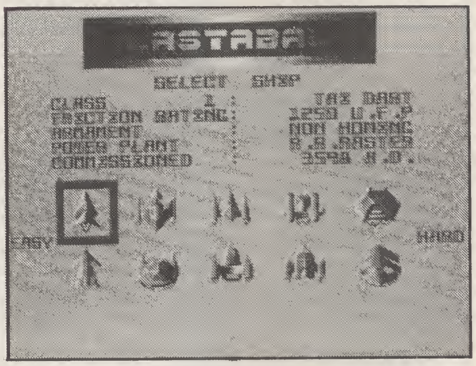
Take Your Pick

There are ten different ships available to the player. Each offering different degrees of difficulty. The puck can be shot at or nudged (as can your opponent) and the choice of ship is shown by name, friction rating and armament.

The friction rating designated to each ship is a rough guideline as to how fast or slow a ship can travel, how the forces of inertia will affect the gameplay and how controllable the overall game is. Choosing a simple ship in the "easy" class makes the game pretty simple with very little challenge. Choose a "hard" ship and the game becomes very different.

Each ship has a different arms system. For example, the ones on the difficult ships are "homing", sometimes with a 75% accuracy rating. This is important as the game gets a lot faster in the later stages of the game and any help is a good thing.

The sound effects are suitably "electric", but the roar from the crowd is pretty pathetic and there is no music at all — okay, so this game is a budget title, but does it have to be mute as well?



SELECT SHIP

CLASS 1 : TAZ DART
FRICTION RATING : 1250 U.F.P
ARMAMENT : NON HOMING
POWER PLANT : B.A.MASTER
COMMISSIONED : 3598 A.D.

Who To Play

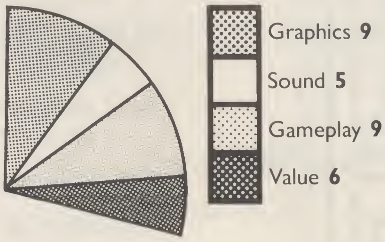
You can play the game against another opponent or against the computer. Personally I think that the two player option is far better as the computer is a little less inclined to go off attacking you as other humans are wont to do!

Other than that, there isn't a great deal to be said about this game, the scrolling is reasonably smooth with the screen acting as a window on about a tenth of the total playing surface. Sprite movement is quite fast and gameplay is responsive. Although a joystick is a necessity as playing this game from a mouse is a real pig to master, and not to be recommended.

There is doubt in my mind that *Blastaball* is offering as much value for money as *Mastertronic's* earlier release, *Sidewinder*. I didn't think that there was much of a game to be honest. However, *Blastaball's* small germ of an idea is a novel one — a shame really as more opponents on the screen with some music and better sound effects would have pushed this game up into real budget status. ■

Blastaball

Publisher: **Mastertronic**
8-10 Paul Street,
London EC2A 4JH.
Tel: **01-377 6880.**



Hampton Court

Gordon Hamlett guides his Amiga controlled robot around the maze of Slaygon and saves the universe yet again!

■ **Having developed the ultimate infiltration** device, job offers start to pour in. Being a decent sort of chap, you naturally sign up for the United Defence Force. You and your machine, the Slaygon, are soon given your first assignment.

Cybordynamics Laboratories Incorporated have been working on a virus of such toxicity that it presents a threat to all mankind. Secret intelligence has indicated that Cybordynamics together with their allies intend to use this new toxin to take over the world.

The Slaygon is a robot, impervious to conventional weapons. With you as its guiding hand, you must infiltrate the laboratory, find and then disable both the main computer and the cooling system. This will in turn cause the reactor to overload and the building will be destroyed. All that remains for you to do then, is to make good your escape in the limited amount of time available to you. Naturally, security in the building is high but your colleagues have managed to forge you a low level pass. Apart from that, you are on your own.

Into The Fray

The complex is basically a large maze through which you travel searching for objects that will prove useful to you. Doors are graded into five security levels and you need the appropriate coloured pass to enter. There are many items to be found and picked up although not all of them are useful and you are limited in the number of such objects that you can carry at any given time.

Some rooms are protected by robot guards although a scanner gives you warning of this and other hazards. You can opt to blast the guard provided that you have found and installed a laser. These again come in various colour coded powers. Naturally, the guard is going to fight back so it might be prudent to switch on your shields. Your sensors can also be activated to give you the lowdown on the guard's strength. All these devices use up energy though and a few zaps from the enemy's gun could render the situation terminally hazardous.

As well as the guards, some of the corridors are protected with force fields, ionizing rods and proton mines. You can walk into these and suffer considerable loss of energy or alternatively, find the appropriate deactivating device.

There are several key rooms dotted round the complex — terminals, teleporters, energy rooms and of course the computer. Again you will need a specific item to activate the equipment in each room. There are five terminal rooms, each giving you one part of the code required to disable the computer.

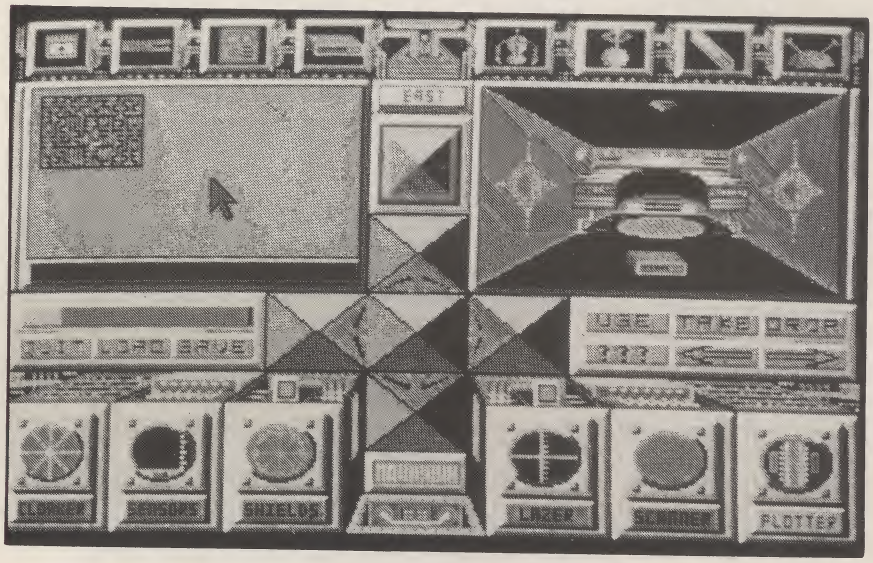
Pretty Pictures

The display certainly looks impressive — 3D views of your surroundings, a map of the complex currently explored and a host of switches and pockets etc. Control is soon mastered and there is plenty of time available to make sure that the right device is selected. You current position can be saved at any time, actually on the game disk which makes a pleasant change although there is only room for one such position.

The problem with *Slaygon* is the gameplay. Actual play involves little more than wandering around the maze five times. The guards are quickly eliminated — I didn't need the most powerful laser, everything was dead by then! Similarly, I never had need to use my cloak of invisibility. Teleports I tried once and then ignored.

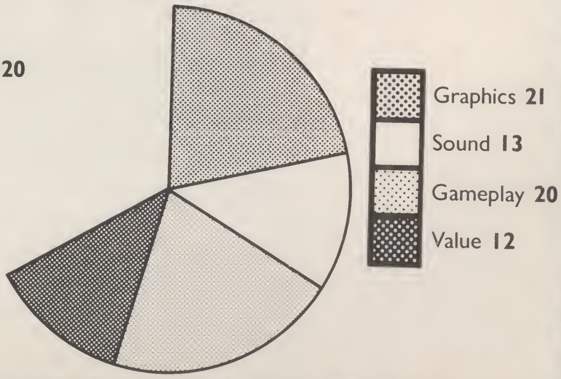
My personal feeling is that the game could have been made considerably more challenging. A larger number of more powerful robots would have maintained interest or how about having a few of them chase you down the corridors. The traps could have been more potent too. With the game as it stands even if you don't have the requisite deactivator, you can walk straight into a mine or whatever and accept whatever damage occurs knowing that it can easily be repaired. The only real challenge comes from playing the game on expert level where all the rooms and key objects are randomly distributed.

To sum up then, *Slaygon* looks good and plays well initially but there is no real lasting challenge offered. ■

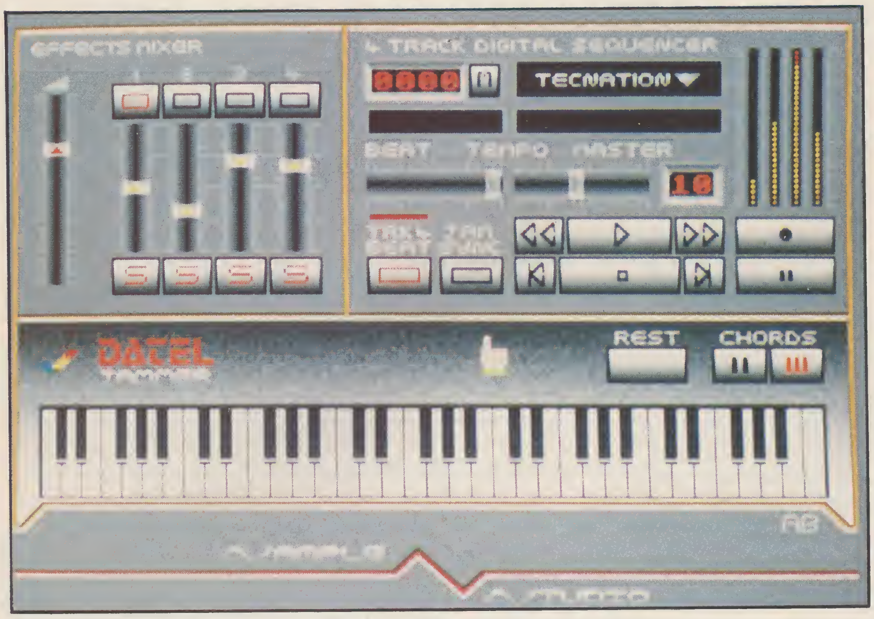


Slaygon

Publisher: **Microdeal**
P.O. Box 68
St Austell
Cornwall
TEL: **(0726) 68020**



A-A-A-Amiga



A new 8 bit sampler is available from Datel with some powerful software to boot. Clive Grace thinks it looks set to go far.

There are a great many music composition packages for the Amiga computer. I reviewed a number of them for *Your Amiga* when it was still part of *Your Commodore* back in January 1988. Since then a lot has happened to the world of music on the Amiga, things are moving very fast in this field, and not a week goes by without a major package being released for this machine.

Take sound sampling for example, this is the Amiga's ability to store sounds inside itself and to replay them at will, the age old example of the CMI Fairlight is probably getting a little long in the tooth now. The Amiga is capable of reproducing a sample that is a great deal better than that of the earlier Fairlights; they were cumbersome, noisy beasts tied down to a pair of clunky old 8 inch disk drives. Of course back in 1985, the Fairlight was the bees knees in computer sound sampling.

Mr Paul Hardcastle has a Syco Fairlight, Kate Bush and Peter Gabriel both have the Model 2 and Kraftwork have reportedly built their own samplers. But the humble micro is starting to make an appearance even into the commercial music market. If you look at the back of the sleeve of Tangerine Dream's Tyger, you will notice the Atari symbol next to the Jive Electro label, this is perhaps a nod in the direction of the band's dabbling in 16 bit computer sampling, a cost effective alternative to the big and expensive samplers currently available.

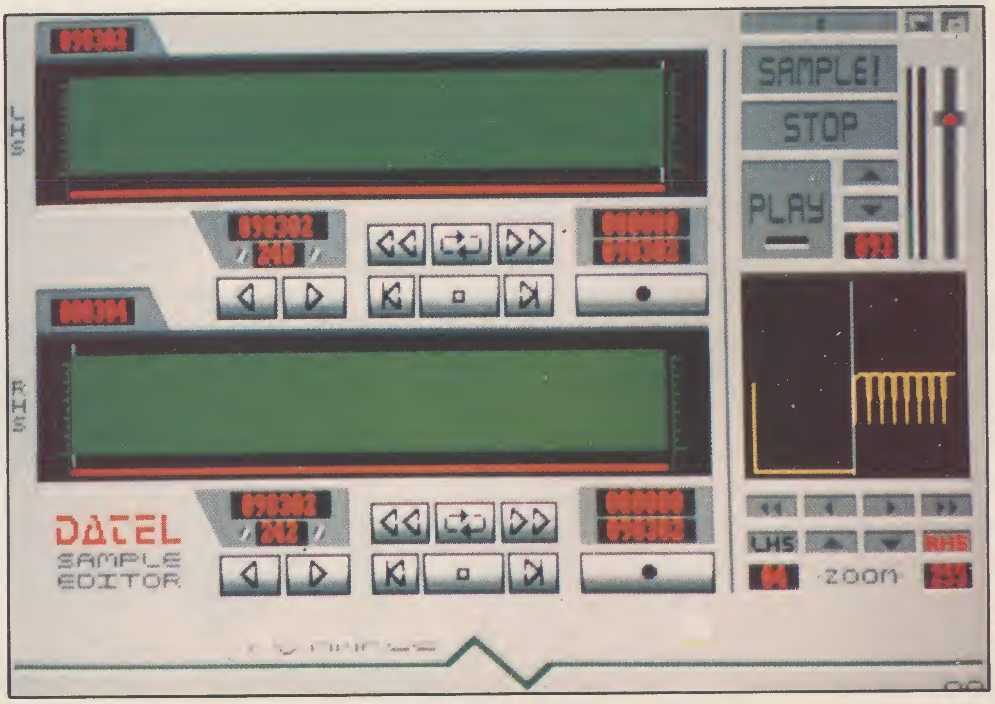
The fact that the Amiga can store samples very easily, is because part of the operating system is dedicated to the control and flow of samples stored in wave-tables in the 512K memory map. These samples can be stored as compressed files, or as IFF files, the Amiga's interchangeable file format. This means that many different packages can use the same samples.

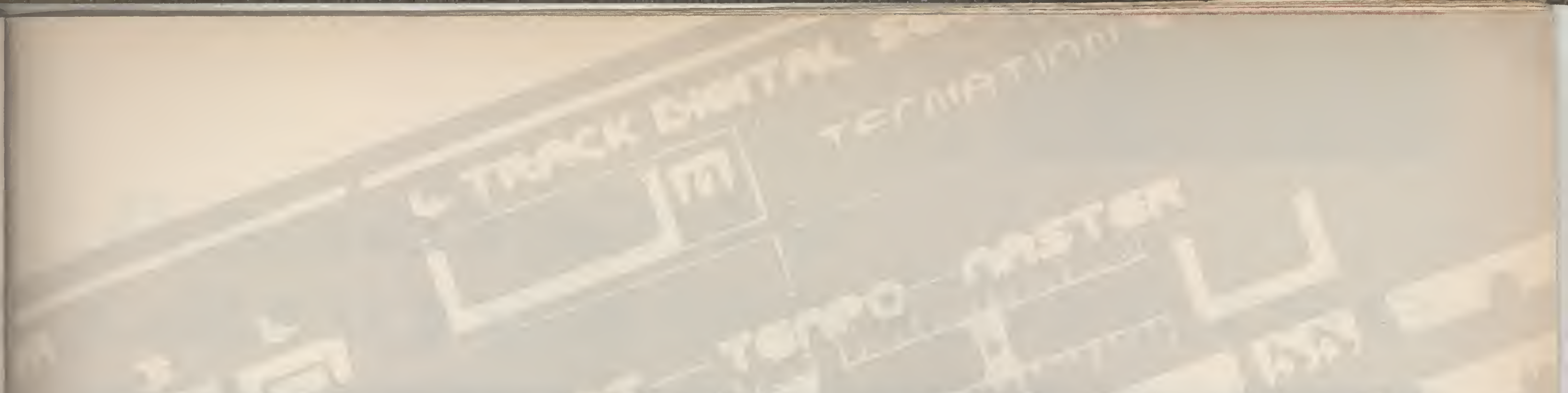
Storing Samples

Saving a sample on the Amiga is quite easy, in fact, over the past few months a number of big advances have been made concerning the price of samplers and it is nice to see a British company being at the forefront of this.

The *Datel Sound Studio* consists of both hardware and software. Together these enable the user to digitise sounds and replay them using the Amiga.

The hardware consists of an 8 bit A to D converter that means the sampler takes sounds from an input source such as a microphone or a line input (say a record player or an other instrument), but





unlike many of the current samplers currently available, the Datel sampler has full anti-aliasing filters (something the base issue of the Fairlight didn't have) with a set of different inputs including line and jack inputs not forgetting the separate microphone input.

The other half of the package consists of the software to drive the hardware. This is in the form of two packages, the *Sample Studio* and the *Jammer*. The *Sample Studio* is used to sample the sounds and edit them, cut them up and modify them quite dramatically. The *Jammer* enables you to use the samples in a musical format by using up to four samples and a simple drum machine to write small tunes.

The sample range is five octaves, although you will find that most useful effects are in the three octaves around middle C.

Installation

Fitting the sampler to the Amiga couldn't be easier. After making sure the computer is turned off, you plug in the sampler, switch the machine on, insert the Datel disk and start working. If the red LED on the sample box is on, then you are in business!

The Datel sampler will work with other packages in memory at the same time, but I would recommend that you finish all tasks before using the sampler software unless you have a megabyte or more of RAM fitted. A simple Ctrl Amiga Amiga will put you into the software with no hassles, and the program does work with extra drives. This means that you can have a samples disk set aside for sample storage if you like.

As the sampler starts off with a clear bank, the first thing you will want to do is get a sample into the machine as quickly as possible. Datel supply a really grotty Microphone, throw it away, buy yourself a decent microphone or connect your sampler up to a synthesiser or something, and get your samples this way. The most important part of the sample chain is the front end, so if you have a crappy microphone, how can you expect to capture decent sounds?

You can buy decent microphones built by AKG or Sennheiser for under £20, and these are often good ones to start off with; don't buy Tandy or Realistic Microphones as some of the cheaper ones are simply based on the crude transducers fitted inside the Microphone supplied with the Datel unit.

The first thing you will notice once the program has loaded is that samples can be in stereo. The left hand sample is on the top of the screen and the right hand sample is displayed on the bottom of the screen. Across the bottom of each sample display are a series of "buttons" looking suspiciously like the buttons of a video recorder or a cassette machine.

On the top right hand of the screen are the sample buttons with a "zoom" display to the bottom right. The zoom facility has its own set of controls and I will get to them in a minute.

The display is very pretty to look at, making good use of the Amiga's graphics capabilities and all of the buttons can be accessed by using the mouse and clicking the screen buttons.

Most of the work is done on the sample screens themselves, with the other buttons merely controlling the rate of sample, the trigger level of the sample input, the use of mono or stereo samples, and editing facilities for the waveform once it is in memory.

The bandwidth of the samples can be altered and even calculated, so you can make the most of your memory. The longer a sample is, the more memory it is going to have to take up, so the quality of the sample has to be decreased. If you want long sounding samples the best thing is to try to make a short sample and then loop it, for example, a string bowing across a violin is easy to achieve from a short one second sample, all you need are the sounds of the bowing and the actual string sounds, by selectively chopping off the sample halfway through and looping the sample back, you can achieve exactly the same results.

The numbering system is a bit weird. To get a little technical the numbering system relates to the DMA rate of playback not in KHz or whatever, so a minimum sample rate can be from 124 DMAs which will give you a very good but short sample length the higher you go, the less quality you are going to get. So if you have a sample rate of, say 1000, the sounds are going to be pretty crummy the sample rate in DMAs can go as high as 65000, but unless you want to record pure quantisation noise, there is little point in going above 1000 DMAs as the rates move in steps of two and auto repeat appears after a one second delay.

The most useful samples at high samples rates (therefore low DMAs) are percussion instruments. I have transferred a load of good percussive sounds from commercial recordings to my great satisfaction.

Mono Sampling Option

For longer samples, whilst retaining the quality, you may want to not have stereo samples, and use the right and left hand channels as one contiguous block. I must admit that a Mono sampler that can produce quality samples is more use to me than a stereo sampler producing medium quality samples. With this facility you can achieve pretty decent samples that are probably better than most of the dedicated 8 bit samplers around on other computers. The quality is something approaching the sort of samples possible on the Atari 520 ST using the Hybrid Arts package a proper 16 bit full resolution sampler the difference is that the Hybrid Arts sampler costs five and a half times more than Datel's £70 package.

So You've Got A Sample

Once you have captured your samples and you have them cut down to the size you want, with all of the necessary looping parameters set and so on, you can start to incorporate them into your own music by saving the file as an IFF file and loading it into a IFF supporting package such as *Deluxe Music Construction* set or *Datel's Jammer*.

The Jammer Software

Datel's Jammer is a simple to use composition package supporting some interesting facilities that are in keeping with the rest of the package.

The *Jammer*, like the *Sample Studio* is based around the simple operation of the mouse and the cassette recorder buttons that appeared earlier. Looking like one of those four track cassette recorders home musicians find so useful. It is not surprising to find that it isn't really supposed to stand up against powerful package like *Deluxe Music* or *Aegis Sonix*, but it is the ideal package through which you can try out your musical ideas using sounds from your sampler.

In true "Intuition" style, the software can be operated in the multi-tasking environment so you can have the *sampler* and the *Jammer* in main memory at the same time, but I wouldn't recommend it unless you have a megabyte on hand, and even then, the hardware demands of the sampler on the Amiga are quite a lot (taking all interrupts at one point), so multi-task at your risk.

The most important part of the screen is the keyboard. From here you can enter music on a piano style keyboard in much the same way both *Deluxe Music* and *Aegis Sonix* allow. You can use the computer keyboard for entering notes, and there is an icon for selecting either two or three note chords. You can have a maximum of four sounds playing at any one time (including the drum machine) so you are going to have to be a little inventive when it comes to setting up complex sounds.

The top right of the screen is devoted to four sliders. These are for mixing down your music, and if you have your Amiga set up to your Hi Fi. then you are in for a treat, the Jammer plays everything in stereo with a master volume slider to control the overall volume. With the chord button on, you occupy the adjacent track, so if you are playing two note chords on track one, then both track one and two will be taken up.

Conclusions

There is no doubt that the *Datel Sampler* is supposed to be a giant killer. 8 Bit samples are currently the norm for the Amiga, although I am aware of 16 bit samplers being planned for musical applications in the USA, and I look forward to seeing these as they will no doubt compete directly with the more expensive samplers for the Atari ST.

The Amiga can produce some powerful sounds if you put the sound output through a decent pair of speakers and this is where users of the *Datel Sample Studio* and *Jammer* software are advised to plug in their machines. The computer monitor speakers cannot possibly hope to properly play back your samples, and it would be foolish trying to do so, invest in a set of amplifier leads, go on — you'll love it!.

The *Datel sampler* hardware is excellent. The samples are reasonably quiet (free of noise that is) and with judicious use of the variable bandwidth control, you can get the right kind of samples into the computer with ease.

The software is very easy to use. *Datel* do supply a manual, but if you have used an Amiga before then I would guess that it will take around a minute to find your way around both the software packages. The display is pretty easy to read, and the controls are a doddle to master.

The *Jammer* software is very basic and suitable for just the simplest of composing. If you just want to write a few ditties then the *Jammer* will be fine. If you want to use your samples in a more adventurous piece of music, then I would recommend having a look at *Deluxe Music Construction Set*, it can support sample files and so on.

The approach to storing notes is a clever one. The use of cassette machine type controls has proved invaluable on *Superbase* and *Superbase Professional*, so why not apply it to a music package? The end result is a remarkably friendly and straightforward package to use and it succeeds as being one of the easiest packages I have ever used on the Amiga.

The price tag of £69.99 is most welcome, and is certainly a surprise. Most 8 bit samplers for other computers cost in the region of £150 to £200, certainly the sampler hardware offers good value for money. The software could be seen as an added bonus.

This is a good product. It undercuts the *Perfect Sound* sampler unit by some £15 and offers better control over the quality of the samples once you have captured them; the software is reliable and fast with no signs of sluggishness.

A Fairlight it isn't, but the *Datel Sampler* can certainly start you on the right road to proper sound sampling. ■

Amiga Pro Sampler Studio

Publisher: **Datel Electronics**
Units 8/9 Dewsbury Road
Fenton Industrail Estate
Fenton Stoke-On-Trent
TEL: **0782 273815**
PRICE: £69.99
(state machine when ordering)

Assembly Language Course

If you want to move into assembly language for the 68000, but aren't sure where to start, let Peter Lawrence lead the way.

■ **If you're looking for an alternative** to AmigaBASIC for programming your machine, the options available are comprehensive and growing all the time. Amiga implementation are now available for most of the common high-level languages including C, BASIC, Pascal, Modula-2, LISP, APL, FORTRAN and many others. However, if your applications need to optimize speed and/or code compactness then there is really no alternative but to move into assembly language. None of the high-level languages can compete with assembly language in this way, no matter how good (or expensive) the compiler may be.

There are now several good assemblers available for the Amiga but programming this machine in assembly language, is in many ways, quite different from any of the earlier 8/bit micros. As you learn a little more about the Amiga system software, it will become apparent that this machine, despite its complexity and high performance, is really easier to program than most other machines. A basic task such as opening a window on the screen and performing simple graphics and I/O operations on a machine such as the C64 or the Apple II is a daunting task to even experienced assembly language programmers but, as we will see later on in this series, on the Amiga this, and considerably more complex operations, are extremely simple to achieve.

If you've had any experience with assembly language on a smaller machine you'll realise that all it needs to program is a knowledge of particular microprocessor's assembler syntax and a page or so of special hardware locations and system routines which control things like game controls, screen modes and I/O. With the Amiga the balance is a little different. While a detailed knowledge of how to program the 68000 is essential you will rapidly come to realise as this course continues that there is considerably more than a page-full of system specific information to be absorbed. In this course we will naturally be devoting a significant amount of space to the details of 68000 programming, but even more time will be spent discussing the Amiga system software since this is the secret of making the Amiga stand on its head with minimum effort.

The Assembler

The first thing you'll need to start programming in assembly language is an assembler. There are now several assemblers available for the Amiga as well as a number of cross-assemblers. It doesn't really matter which of these you have as the differences in source code required by each of them is not great and it is generally not too difficult to translate from one to the other (with one notable exception; discussed below). For this series of articles all of the examples will be written for the Seka assembler from Kuma. This decision was made not because the Seka assembler is superior; all of the available assemblers have their advantages and disadvantages. However, despite its numerous disadvantages the Seka assembler was the first Amiga assembler to be generally available (the Commodore assembler was supposedly available when the Amiga was released but was often quite difficult to get hold of). In addition, the Seka works very comfortably on single disk drive system.

One of the disadvantages of Seka's assembler is that it does not come supplied with any of the Amiga include files which contain definitions for all of the system software's user-accessible labels, structures and routines. The declaration of these is left up to the user whereas some other assemblers require only the inclusion of statements such as:

```
INCLUDE "intuition/intuition.i"
```

to bind the required declarations into the program. This generally means that to translate a Seka source file into Commodore assembler format is relatively easy but the reverse cannot be done without considerably more information being available (i.e. the contents of the include files). Therefore, by supplying examples written for the Seka assembler, this extra information will be specifically supplied and the program should be usable no matter which assembler you are using.

Getting Started

Now let's get down to specifics. In this first installment we'll have a brief look at the 68000 processor and some of its capabilities. This is a lot of material to cover in one article and so the description will naturally not be complete, but enough of the basics will be presented to prepare you for programming the Amiga.

In discussing the architecture of the 68000 I am going to make a few basic assumptions about your current state of knowledge. I will take it as read that you are familiar with basic computer concepts such as bits, bytes and the binary and hexadecimal number systems as well as two's complement arithmetic. If this is not the case then it would be good idea to learn these basics from one of the hundreds of books available.

Almost every basic text on assembly language programming (for any microprocessor) will have an introductory chapter introducing these concepts. You may wish to check your local library or book store. In fact if you intend to start doing any serious assembly language programming, a good book on programming the 68000 is an essential reference, and will supply far more detail than is possible in the limited space available here.

I'll also be making a few assumptions about your level of Amiga knowledge. I will assume that you are at least familiar with the basic Amiga concepts of screens, windows, multi-tasking and the like, as well as taking for granted that you know how to use the CLI to get your assembler up and running.

68000 Registers

In addition to the computers normal memory a microprocessor has access to several other storage locations which are built into the processor chip itself. These locations are collectively referred to as registers and are where most of the data manipulations are performed. Although some instructions are capable of working on memory rather than the registers, register operations are generally faster and the program instructions occupy less memory.

The number and type of registers available vary from one microprocessor to another but the 68000 is particularly well endowed. In the 68000 these registers are of four types.

■ Status Register — this register is 16 bits wide and holds information concerning the status of the machine and the results of previous operations. This information is used by the conditional branching instructions. Most assemblers allow this register to be accessed by the name SR, however, the upper eight bits are of interest only to systems programmers and are beyond the scope of this course. The lower eight bits contain the information required for applications programming and are often collectively referred to as the Condition Code Register (CCR). The operation of this register will be discussed in more detail later.

■ Program Counter — this register is 32 bits wide (although on the 68000 only the lower 24 bits are useful) and controls the flow of the program. The contents are always the memory address of the next instruction to be executed. Instructions which cause the execution to branch to another part of the program (analogous to BASIC's GOTO and GOSUB instructions) operate merely by changing the contents of this register. This register is generally referenced as PC but some assemblers allow the symbol * to be used instead.

■ Address Registers — the 68000 has eight registers whose primary function is to hold memory addresses. Each address register is 32 bits wide but, as with the program counter, only the lower 24 bits are useful for address information. This is because the 68000 can only address 16 megabytes (did I say only!). However, this restriction does not necessarily apply to later members of the 68000 family and so for future compatibility the upper 8 bits of address registers should always be zero. The registers are referenced as A0, A1, A2,... A7. The examples given later will clarify how they are used.

■ Data Registers — there are also eight 32 bit registers known as data registers which are used, logically enough, as locations to hold and manipulate data. This data can be just about anything from your bank balance, which I assume will fit into 32 bits (I still have no trouble with 8), to your dentist's initials (but not his bank balance which probably wouldn't fit into 32 bits!) These data registers are referred to as D0... D7.

Data Sizes

Although most of the registers in the 68000 are 32 bit it is sometimes necessary to manipulate data in smaller chunks. ASCII characters, for example, can be stored in single 8 bit bites so it would be an incredible waste of space if your wordprocessor had to use 32 bits of memory to store each character. To avoid this problem the 68000 recognises three different data sizes: the 8 bit BYTE, 16 bit WORD and 32 bit LONGWORD. Data can be loaded into and out of data registers in any of these forms. If a BYTE is loaded into a data register its value is put into the lower 8 bits of the register and the rest remains unchanged. Similarly, a WORD will only effect the lower 16 bits.

When a BYTE of data is moved into the memory address 1000, for example, the data is stored at the specified address (in the Amiga memory locations are only 8 bits wide). When a WORD is transferred to this address then the high 8 bits go into location 1000 and the lower byte is stored at 1001. Similarly a LONGWORD would be stored as four bytes from 1000 to 1003. WORD and LONGWORD data must be stored in memory starting with even numbered addresses.

For address registers the situation is slightly different. An address register may only handle WORD and LONGWORD values. Also when a WORD is transferred to an address register it is stored in the lower 16 bits and the rest of the register is 'sign extended'. We will discuss in detail what this means at some later date but at the moment it is sufficient to say that this converts the WORD into a LONGWORD without changing its value.

The size of the data involved in an instruction is specified by appending .b, .w or .l to the instruction.

Addressing Modes

Each line of assembly language code requires two basic components: an instruction and information on where to find the data which the instruction requires. Before going on to look at and use some of the 68000's instructions we will first explore the ways in which the data can be presented to an instruction. This is known as the processor's addressing modes. To illustrate each of these addressing modes we will use the 68000 'move' instruction to construct examples. This instruction requires two operands separated by a comma and simply takes the data specified by the first operand and copies it into the location specified by the second operand.

Absolute Addressing — Syntax: x where x is a 16 or 32 bit number.

The data required for the operation is located at the memory address given for example:

move.l 1000,2000 ; moves the LONGWORD from location 1000 (1000-1003) into locations 2000-2003.

This mode is actually two different modes as far as the microprocessor is concerned, depending upon whether the address is a 16 bit or 32 bit quantity. However, your assembler will probably take care of that problem for you so you can consider absolute addressing as a single mode.

Immediate Mode Addressing — Syntax: x where x is 8, 16 or 32 bits.

The actual value of x is used as the data, for example:

move.w 9876,5432; moves the value 9876 into the memory word located at 5432 (5432-5433).

Data Register Addressing — Syntax: Dn where n is a register no, for example:

move.l d0,d1 ; copies the LONGWORD from d0 to d1.

move.w d4,1000 ; copies the lower WORD of d4 into memory location 1000 (and 1001).

move.l 1000,d6 ; the LONGWORD from memory address 1000 (1000-1003) is copied into d6.

Address Register Addressing — Syntax: An where n is a register no.

This functions analogously to data register addressing but using address registers instead, for example:

move,l a0,1000 ; copies the contents of a0 to location 1000.

Remember that BYTE data cannot be used with address registers.

Address Register Indirect Addressing — Syntax: (An)

In this mode the data is not the contents of the data register but the contents of the memory location 'pointed to' by the address register. That is, if A3 contains the value 50000 then A3 is said to point to location 50000 and so (A3) refers to the contents of memory location 50000, for example:

```
Before: Memory byte at 1000 value    22
        Memory byte at 2000 value    99
        Register A2         value  1000
        Register A3         value  2000
Instruction: move.b (a2),(a3)
After:  Memory byte at 1000 value    22
        Memory byte at 2000 value    22
        Register A2         value  1000
        Register A3         value  2000
```

Note that since the data is not actually in the address registers, the BYTE data size can be used.

Post-Increment Indirect Addressing — Syntax: (An)+

This is in essence the same as the above example except that after the instruction is executed, the value in the address register is incremented, for example:

```
Before: Memory word at 1000 value   222
        Memory word at 2000 value   999
        Register A2         value  1000
        Register A3         value  2000
Instruction: move.w (a2)+,(a3)
After:  Memory word at 1000 value   222
        Memory word at 2000 value   222
        Register A2         value  1002
        Register A3         value  2000
```

Register A2 was incremented by 2 because the data size was WORD. For BYTE data the increment would be 1 and for LONGWORD 4. The exception to this is data register A7 which is the hardware stack pointer (explained below). To ensure that this always points to an even address it increments by 2 when BYTE data is used.

Pre-Decrement Indirect Addressing Syntax: −(An)

In this case the address register is decremented, and this occurs before the instruction is executed, for example:

```
Before: Memory word at  998 value 111
        Memory word at 1000 value 222
        Memory word at 2000 value 999
        Register A2         value 1000
        Register A3         value 2000
Instruction: move.w −(a2),(a3)
After:  Memory word at  998 value 111
        Memory word at 1000 value 222
        Memory word at 2000 value 111
        Register A2         value 998
        Register A3         value 2000
```

The size of the decrement is related to the data size in the same way as described above for post-increment indirect addressing including the exception for register A7.

Indirect Addressing with Displacement — Syntax: x(An) where x is a 16 bit number.

This is once again similar to address register indirect addressing except that the data is located at the address pointed to by the contents of An Plus the quantity of x. The address register contents is left unchanged, for example:

If address register A1 contains the value 5000 then the instruction move.l 20(a1),d0 will load d0 with the LONGWORD located at memory address 5020.

As a variant on this mode the address register An may be replaced by the program counter PC and thus data addressed relative to the current position within the program.

Indirect Addressing with Index — Syntax: x(An,Dn.L), x(An, Dn.W), x(An,An.L) or x(An,An.W) where x is an 8 bit value.

Whereas, in the example above, the address of the data was found by adding the contents of a memory address and a displacement, in this case a WORD or LONGWORD value contained in either an address or data register is also added to the calculation. This extra register is called the index register. The values stored in the registers are not changed, for example:

Before:	Memory word 12050	value 1234
	Register D0	value 9999
	Register D1	value 2000
	Register A0	value 10000
Instruction: move.w 50(a0,d1.l),d0		
After:	Memory word 12050	value 1234
	Register D0	value 1234
	Register D1	value 2000
	Register A0	value 10000

Note that the .w and .l appended to the index register indicates whether the entire register or only its lower 16 bits should be used as an index.

For general purposes such as instruction syntax this mode will be referred to by x(An,xr.s) where xr is the index register and.s specifies its size (.w or .l).

Once again, the address register (not the index register) may be replaced by PC to reference data relative to the current contents of the program counter.

Status Register Addressing — Syntax: SR or CCR.

A small number of instructions can directly access the status register. If the syntax SR is used then the entire 16 bit register is involved. Unless you are a systems programmer you will very rarely, if ever, have need to access the SR. For applications programs the syntax CCR can be used to gain access to the lower 8 bits of this register.

The Hardware Stack

In the 68000 the address register A7 has a special function. It points to the top of a data structure known as a stack. A stack is basically an area of memory in which data is stored in the same order as it arrives. A common analogy is a pile of dishes. As each dish is added to the pile it is placed on top and the stack grows larger.

If at any time you wish to remove a dish from the stack the only immediately available dish is the one directly on top. Once it is removed the dish beneath becomes accessible. Such a structure is called a LIFO (Last In First Out) structure for obvious reasons. In the 68000 the stack grows downward through lower and lower memory addresses as elements are added to it so the top of the stack is really at the bottom in terms of memory addresses — just to be confusing. Elements are added to the stack by means of instructions such as move.l d0,–(a7) which moves (or pushes) the contents of D0 onto the stack. Since A7 always points to the top of the stack, using the pre-decrement addressing mode ensures that the new element does not overwrite the current top of stack. Similarly, to remove items from the stack an instruction move.l (a7)+,d0 will restore register d0 and move the stack pointer to the new top of stack.

The stack is a very useful and a very important part of the Amiga system. It may be used freely, but be warned, it must be preserved. If your programs and subroutines place information onto the stack then they must be sure to remove it before they finish. If you leave your own data on top of the stack, then when the system tries to recover its data from the stack it will get the wrong information and will probably collapse into one of the many possible states of mental illness to which badly programmed conputers are so prone.

The Status Register

As was mentioned earlier, the lower 8 bits of the status register are often termed the condition code register and are important to application programs in that they preserve many of the important results of previous instructions for use by the conditional branch instructions. Each of the lower five bits of the CCR is used to indicate a specific type of result as is described below.

Bit 0 is termed the carry bit (C) and it is set if the result of an operation causes a bit to be carried out of the most significant bit of the data being processed. If, for example, we add the two 8 bit numbers such as 150 and 200 into an 8 bit location then the result, 350, will not fit into 8 bits. The eighth bit will have overflowed and been carried into the carry bit as if it were a ninth bit. For WORD and LONGWORD operations the carry bit acts as a 17th and 33rd bit respectively. The carry bit also receives bits which are shifted out as a result of shift or rotate instructions which will be discussed in a later article.

Bit 1 is the overflow bit (normally termed V) and it indicates whenever the result of a two's complement operation cannot be represented due to overflow (positive or negative). As an example, if we add to positive numbers and a bit overflows into the last bit within the byte then the overflow flag will be set. This is because in two's complement notation this top bit is the sign bit and so if the result of an addition overflows into this bit it will give an erroneous negative result.

Bit 2 is called the zero bit (Z) and its operation is simple. This bit is set whenever the result of an instruction is zero.

Bit 3 is the negative bit (N) and so it becomes set whenever a result is negative, that is, whenever it has its high order bit set. This is different from the V bit in that it is set by both legitimate and illegitimate results.

Bit 5 is the extended bit (X) and is almost identical to the carry bit but it is not effected by as many instructions. Its purpose is to allow multi-precision arithmetic (more than 32 bits). This is achieved by performing a 32 bit operation on the lower bits of the data and then another on the higher data bits but this time including the X bit and thus facilitating a carry from bit 31 to bit 32. Since the X bit is effected only by instructions involving multi-precision arithmetic it preserves a carry for longer than the carry bit.

The 68000 Instruction Set

What follows is an introduction to some of the instructions available on the 68000 processor. The list presented here is not complete but it gives enough instructions to construct some interesting sample programs. As this series goes on further instructions will be presented as they are required.

The format of each instruction is as follows. A short description of what the instruction does will be given followed by the syntax in the form of: move(.l:.w:.b)

(Dn:An:(An):(An)+:-

(An):x(An):x(An,xr.s):x: x),

(Dn:(An);(An)+:-

(An):x(An):x(An,xr.s x)

The text enclosed within the brackets () represents the options available and each option is separated by the symbol l. thus (.l:.w:.b) means that move.l. move.w and move.b are all valid forms of the instruction. The syntax in the example above thus includes:

move.l d1,–(a2)
move.b 23(a1,d3.w),(a7)+
but not,
move.w a1,a0
since address register direct addressing is not allowed in the second operand.

After the syntax description the effects of the instruction upon the CCR will be described followed by any notes or exceptions which are of interest.

Continued in the next issue of your Amiga.

Undersea Adventures

Gordon Hamlett dons wetsuit and flippers in order to test Return To Atlantis, one of the latest releases from Electronic Arts.

All the hours of hard work that you put into your studies have finally paid off. You have finally graduated from the Academy. Not only that, but you have graduated as the most promising agent. Naturally, you can't wait for your first assignment. But all your training as a marine biologist, deep sea diver, high-tech explorer and general undersea warrior could not prepare you for the missions that lie ahead.

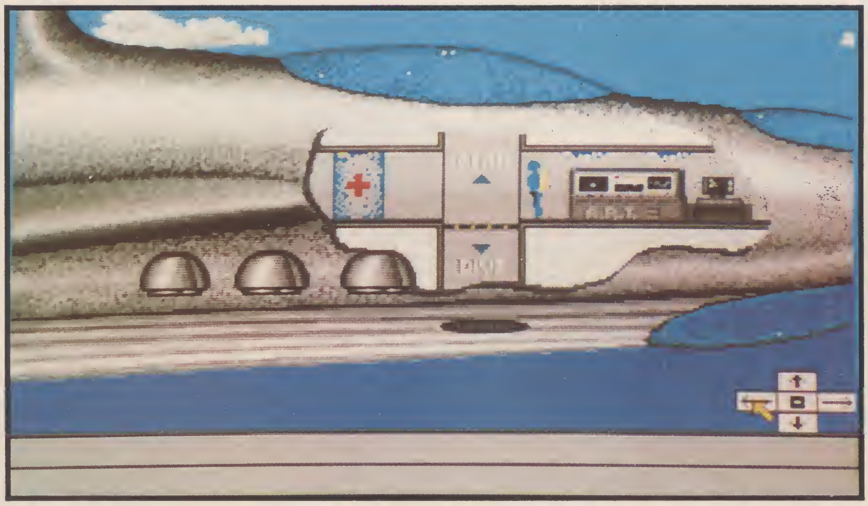
Man had long since realised that if he was to survive, he was going to have to exploit the resources of the world's oceans. International agreements were drawn up limiting the treasures of the seas. Unfortunately, man is a greedy species and an organisation — Maximum Utilities Management started to exploit rather more than their fair share of things. War eventually broke out between these land-based forces and those who still believed that a new Atlantis was possible.

In the midst of all this strife, a secret organisation — the Foundation — was established to try and maintain the peace. Thus it was that they signed up the best graduate of the Academy to help them in their plans to unify the forces of the Earth.

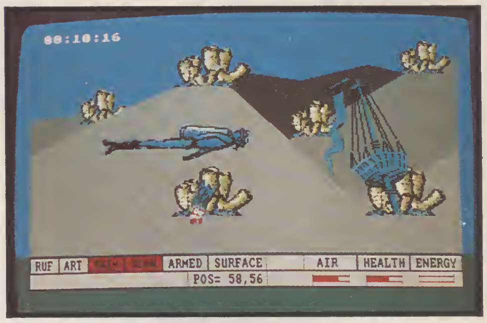
In At The Deep End

As an agent of the Academy, your task is straightforward. Apart from carrying out whatever missions they ask of you, you have a duty to protect the creatures of the ocean while opposing those who seek to unbalance the ecosystem for their own particular gain.

Your character is judged on seven different attributes. Psychology determines how characters behave towards you; most important when it comes to questioning informants. Athletics determine how mobile you are under water, especially when swimming against the strong currents. A lot of your work is carried out via your underwater robot and telepathy is a gauge of the range at which you can accurately communicate with him.



Awareness is a measure of how much self control you can exert over your own body. The higher the rating, the slower you use up oxygen. Programming ability is important when you are instructing your robot to perform given tasks while your weapons rating shows how proficient you are when under attack. Finally, your health is a measure of your well-being. At 50 per cent health, you are only 50 per cent efficient.



Each of these attributes is marked as a percentage. When your character is generated, you can expect the figures to be fairly low although you can change one characteristic by up to five percentage points.

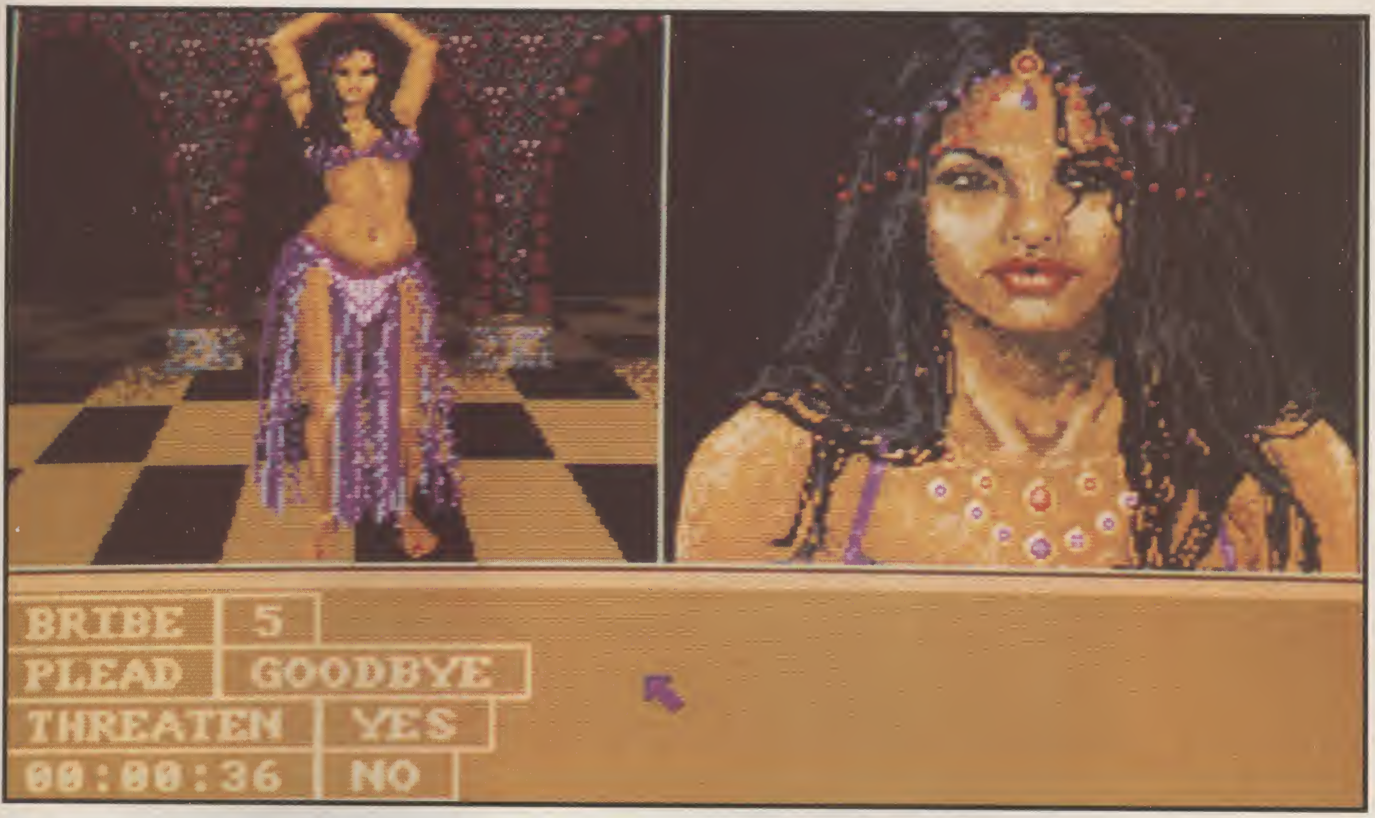
The game starts on the Foundation's secret base on the Isla Perdita, somewhere in the mid-Atlantic. From here, you receive your briefing in the form of a holographic projection. Once the briefing is complete, you can make your way to Sea Thief Cafe where a motley assortment of potential informants hang out.

Here, you can question them about your mission. They may or may not be able to help you. Bribing, pleading and threatening are all legitimate methods of questioning although which one works best for each person is up to you to discover. All the questioning takes time though and you only have a certain amount, to complete your mission in.

Once you are satisfied with your answers, it is time to put to sea. Your launch , the Viceroy, takes you to the location of whatever it is that you are exploring. Once there a cutaway diagram shows the areas of importance on the Viceroy.

First stop is likely to be the Advanced Robotic Transco-ordinator (ART). This is your computer and the central intelligence unit of your mission although he tends to be a right smug little so-and- so, boasting about how clever he is. Here you can scan the ocean floor although the larger the area that you wish to look at, the longer it takes and the clock keeps ticking. A trip up to the gear room allows you to pick up any tools that you have found whereas the medical centre allows you to heal your wounds albeit at a cost of your experience points.

Everything ready and it's time to dive. The scene shifts to your underwater view. A menu at the bottom of the screen illustrates the commands available to you and gives you readouts on your health and air supply.



Underwater Pets

Your main ally underwater is RUF, your Remote Underwater Friend, a cross between a robot and a mini-submarine who pines if you ignore him for too long. You can program RUF to search an area for you, specifying whether you want him to search for metals, radioactivity, chemicals or temperature changes. You can also determine how closely he looks at things — a quick cursory glance or a slower more deliberate approach. You can monitor his progress through a camera and he will happily send back cheerful little messages to you concerning what he has found.

When you have located the object of your quest,it is probable that you will need the services of ART again to beam objects up and down. Hopefully then, the mission will be complete and you can return back to base where you will be promoted i.e. your attribute scores will increase.

Keeping Your Interest

There are fourteen different missions for you to undertake although they must be tackled in sequence. Starting off, you must first locate some buried treasure from a sunken Spanish Galleon in order that it might be displayed in museums rather than be melted down for scrap. Then the pipeline carrying the hotline between the White House and the Kremlin needs repairing.

Other missions include delivering a vital vaccine to some underwater scientists, tracking whales that have been radio-tagged for migration studies, recovering submarines and exploring underwater cities.

Return to Atlantis is an unusual variant on the role-playing theme and the first that I have seen that gets away from dwarves and dragons. Getting used to the underwater controls is initially tricky. Having found the object that I wanted, I invariably started swimming away from it when I really wanted to stay put and examine it. Firing underwater takes some getting used to also.

Despite that though, I enjoyed the game immensely both for its originality and playability. Long term addictiveness may suffer slightly though as the game feels very much the same throughout the different scenarios. There is likely to be alot of backtracking too as some of the tools that you want for one scenario can only be found in another. That smacks somewhat of extending the game just for the sake of it. Any foundation worth its salt would have given you the right tools to start with. Similarly, I'm not convinced that questioning the informants works very well. It is a nice idea but I suspect that it's in the wrong game. Maybe it would have been better to have you picking up clues and then sailing off to interrogate people rather than have them all on your doorstep.

Nevertheless, *Return to Atlantis* is a thoroughly enjoyable game with a lot of things to do in it. As such, it represents excellent value for money.

Return to Atlantis

Publisher: **Electronic Arts**
Langley Business Centre
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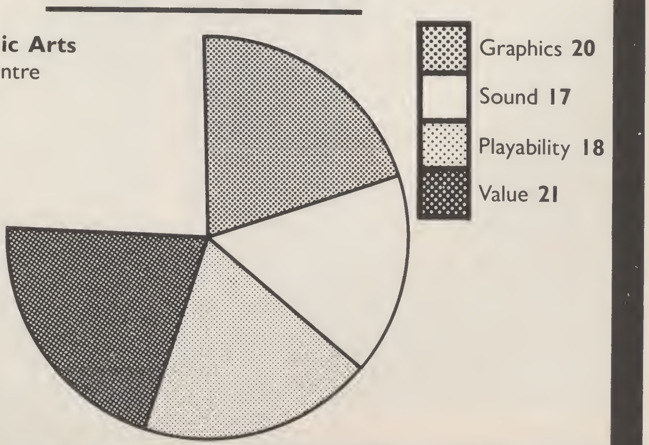
Slough
Berks
SL3 7YN
TEL: **(0753) 49442.**
Price: £24.95.



Golden Glove

At last! The Amiga has a Gauntlet clone all of its own. Mary Branscombe takes sword in hand and tries it out.

Garrison has been touted around the public domain for goodness knows how long! With the tantalising taste of just one single screen, the Garrison demo disk was hot property; a must for any self-respecting Public Domain hack if ever I saw one!

With *US Gold* releaseing *Gauntlet* for the Atari ST, everyone expected an Amiga version to follow suit, right?

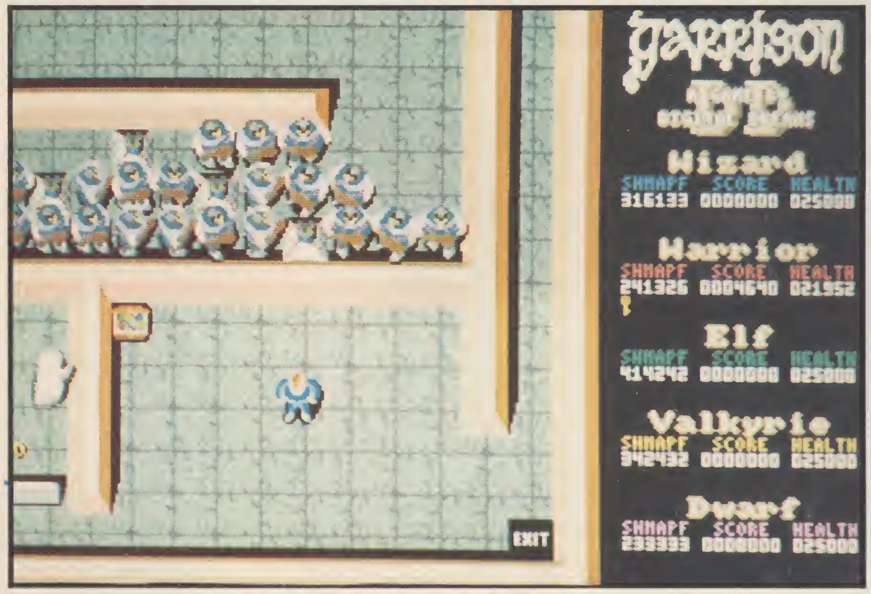
Wrong, *Gauntlet* was never released for the Amiga, and, as far as I can make out, it will never be released for the Amiga, which is interesting when you consider the fact that *US Gold* are looking after this game, released by the German *Rainbow Arts* software house.

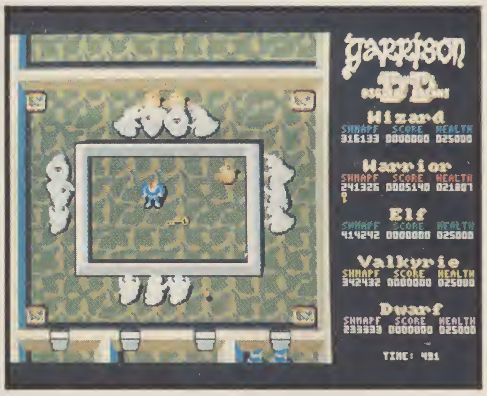
Not that the fact that *Gauntlet's* non appearance will worry anyone, *Garrison* is a very good clone and is, in many ways, a superior game with better sound effects and far better animation than was ever seen on the Atari ST and the original coin op.

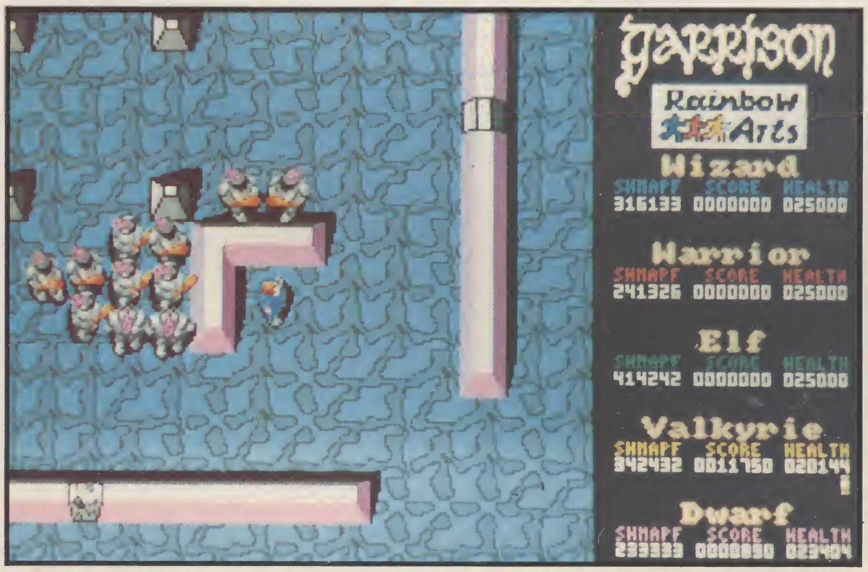
The basic premise behind the game is the same as Gauntlet though. You are in search of a dark magician — the only guy who can come up with the potion to save a beautiful princess. Naturally you don't see any of this in the game as this is all given on the back of the game's package but it sets the scene for over 128 different screens of hack and slay, none of which ever become boring.

Play With A Friend

As a two player game *Garrison* is fast, responsive and very slick. The sound effects are fairly much like the coin op original and most of your opponents move and react in exactly the same way as the original version.





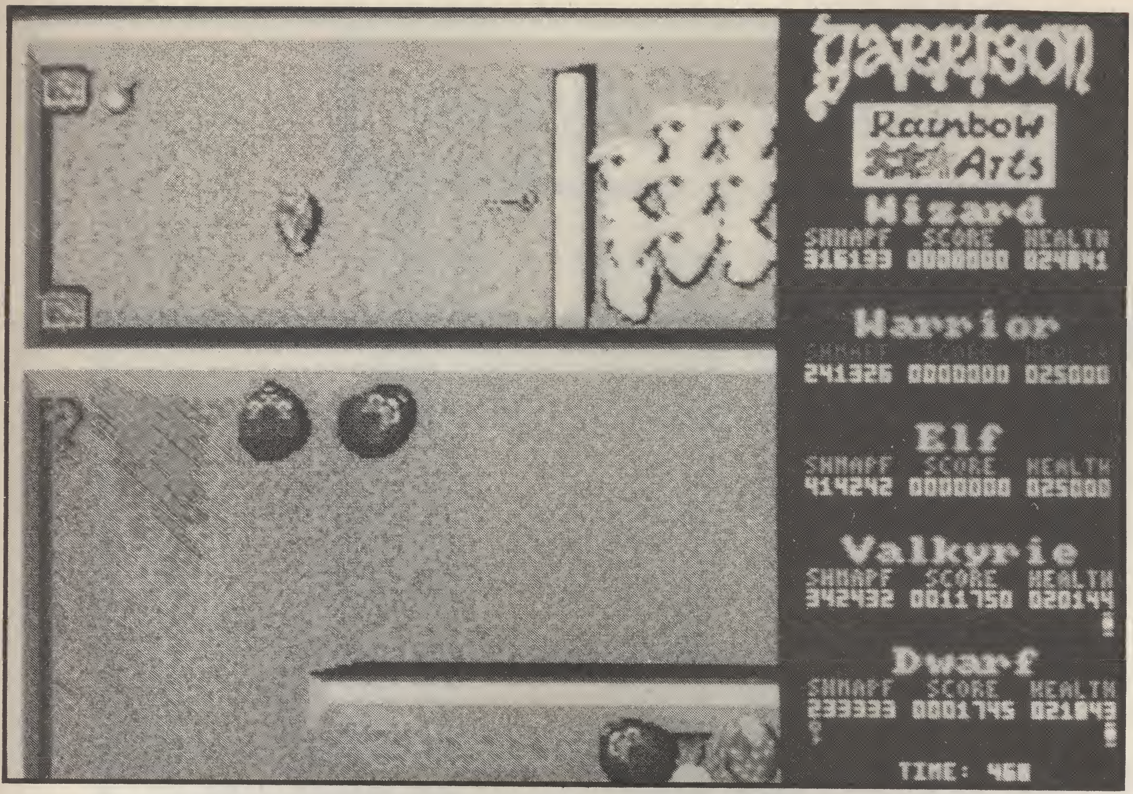


Garrison is graced with some of the finest loading and introduction music I have yet heard on the Amiga, sounding a little like a cross between Popol Vuh and Iron Maiden. The music is hard, heavy and very impressive.

The game naturally enough centers on five different characters; a Wizard, an Elf, a Valkyrie, a Warrior and a Dwarf. They all have their advantages of speed, firepower, agility and accuracy. However, whereas in *Gauntlet* you just select your character and play them until you die, you have the option to chop and change (pun intended) between levels of Garrison. This makes playing game time a little longer then most other games of this type.

The really disappointing thing about this game is that on an Amiga 500 and a 1000 with no memory expansion all you have is a single character design. If you have two players on the screen at one time, you may find it hard keeping an eye on which is your own character.

For those of you fortunate enough to have a megabyte or more memory (and prices are always going down, think about it) you have the full version of the game which has all of the different characters available and you will look like the character that you are playing. Not that it makes a whole lot of difference mind you; the generic characters still throw axes, cast magic bolts or launch arrows depending on whom you select.



Helping Each Other

Playing the game requires co-operation and planning. It is not good enough to go into a load of nasties, firing away at anyone and everything that comes towards you. That's the way an amateur plays the game. No, work out what the monsters are (not difficult) and then find out if they can be killed easily, or if they need a little "remote bashing" by using a spell (the equivalent of a smart bomb).

The aim of the game isn't too clear all the screens — that is very difficult and probably nigh on impossible, but to explore the screens as best as you can stealing food and risk drinking the odd potion (yep some are poisonous) before running to the relative safety of an exit.

Exits allow you to move onto the next level or in some cases skip a few screens.

Some characters fare better than others in some screens, and each level has a name.

One nice(?) touch is the totally sadistic laugh at the end when you die!

And There's More

Onto *Garrison II The Legend Continues*. This is the equivalent to *Gauntlet's The Deeper Dungeons* and is basically 128 more screens of hack and slay for those of you who liked the first 128. Like *Garrison*, the game comes as two disks, the first disk being the "game", the second being the data disk. Both are compatible, so you can play with whatever version you like. Personally I preferred the second disk's dungeon layouts as they are generally more inventive, they require more solving and they have more things to do.

Both *Garrison and Garrison II* are full games in their own right, so if you can get hold of a copy of *Garrison II* but not of *Garrison*, then I wouldn't lose any sleep over it.

As both games are effectively imports, I am afraid they are not cheap. At around £25 for either game they aren't as cheap as many Amiga games, but they are still excellent value and offer some great gameplay not improved by the coin op version still going strong in some of the Arcades.

Garrison I and II

Publisher: **Rainbow Arts**
Supplier: U.S. Gold
Unit 2/3 Holferd Way,
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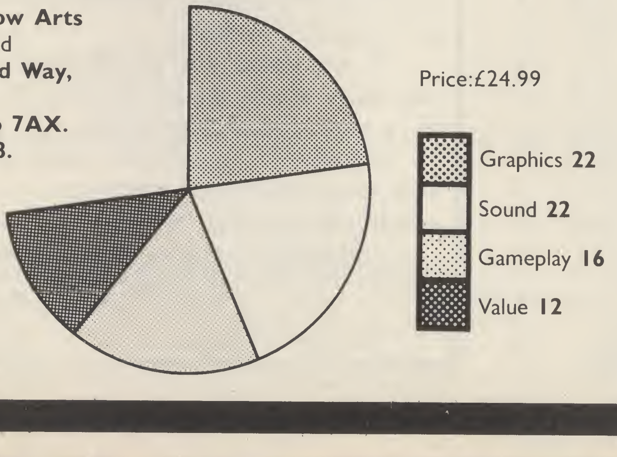
Birmingham B6 7AX.
Tel: **021-356 3388.**

Price:£24.99



If you want Gauntlet for the Amiga, Garrison will most certainly suffice!

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